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ABSTRACT

Part of a health occupations program, these instructional units consist of materials for use by those who are studying to become practical nurses. Unit 16 deals with basic concepts in the nursing of the aged, in community health, and in the legal responsibilities of the practical nurse. Covered next are nursing care procedures for adults with the following diseases or conditions: diseases of the musculoskeletal, circulatory, respiratory, gastrointestinal, urinary, endocrine, reproductive, and nervous systems; diseases of the eye and ear; cancer; infectious diseases; and allergic conditions. The units are comprised of a series of learning modules, each of which contains a rationale, performance objectives, learning activities and answers, terminology, and posttest. (MN)

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HEALTH OCCUPATIONS CURRICULUM

SKILLS AND THEORY FOR PRACTICAL NURSE

UNITS 16 AND 17

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Unit 16 presents basic concepts in the nursing of the aged, in community health and in the legal responsibilities of the practical nurse. Clinical experience is provided in a long-term care facility and through visitations to various community agencies.

COMMUNITY HEALTH

Module A - Legal Aspects
Module B - The Aging
Module C - Community Health
Terminology - included in the beginning of each module
Post Tests: 1. Module A
2. Modules B and C

When you have completed the learning activities and are ready for a test or wish to challenge a test, please see your instructor.

Suggested Resources

The following texts will supplement the learning materials for this unit. If you are unable to locate these materials, your instructor will assist you.

Caldwell, Esther, Ph.D. and Barbara Hegner. Geriatrics: A Study of Maturity. Delmar Publishers, Albany, NY, 1975.

Audiovisual

Trainex Corporation, Garden Grove, California

Crisis in Aging #580

PIMA COMMUNITY COLLEGE

SKILL CENTER

HEALTH OCCUPATIONS PROGRAM

unit 16

COMMUNITY HEALTH

This unit presents basic concepts in the nursing of the aged, the community, and legal responsibilities, for the practical nurse.

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MODULE A	LEGAL ASPECTS	16.A.1
MODULE B	THE AGING	16.B.1
MODULE C	COMMUNITY HEALTH	16.C.1

EVALUATION WILL BE DETERMINED BY THE COMPLETION OF THE PERFORMANCE OBJECTIVES AS LISTED IN EACH MODULE.

SCHEDULE OF TESTS

MODULE A

MODULE B and C

WHEN YOU HAVE COMPLETED THE LEARNING ACTIVITIES AND ARE READY FOR A TEST OR WISH TO CHALLENGE A TEST, PLEASE SEE YOUR INSTRUCTOR.

unit 16

COMMUNITY HEALTH

Module A - Legal Aspects

RATIONALE

The nurse must be familiar with laws relating to health care and the legal implications of ethical issues that affect the field of nursing.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify legal terms and issues in given situations.
2. Demonstrate according to legal standards correct and accurate charting on the patient's medical records.
3. Demonstrate appropriate professional and legal practices in given situations.

LEARNING ACTIVITIES

Directions: All the information you will need to complete this module is included.

ACTIVITY #1. The Law and Its Definitions

Directions: Read the following.

Law is a system of principles and processes by which a society deals with its problems, seeking to solve them without force. Laws are primarily intended to protect the rights of the public. For example, nurse-practice acts are primarily intended to protect the public and secondly to protect the nurse. Laws are sometimes referred to as standards of conduct and are divided into two categories.

1. Public law - regulates relationships between private parties and the government. Criminal law is the segment of public law that deals with conduct injurious to the public and punishments for such conduct.
2. Private law or civil law - regulates the relationships between people. Civil law includes laws relating to contracts, property ownership and the general field of medicine. Nurses need to be especially familiar with civil law since they are expected to use sound judgment and professional skills. Failure to do so violates public trust. The nurse is expected to be accountable for his/her actions.

LEARNING ACTIVITIES - continued

There are four main sources of laws in our country.

1. Constitutions - Federal and state constitutions provide government authority.
2. Legislatures - Congressional and state legislators are responsible for nurse-practice acts.
3. Judiciary system - The courts interpret and make decisions regarding laws.
4. Administrative regulations - Law enforcement at state level is by the state Board of Nursing.

Terminology

You will need to be familiar with the following terms and their meanings in order to understand principles of nursing liability (obligation).

	WORD	DEFINITION	EXAMPLE
1.	Assault	A threat or an attempt to make bodily contact with another person without that person's consent.	Threatening to hit someone.
2.	Battery	Forcefully making bodily contact with someone without his/her consent.	Hitting someone, rape.
3.	Crime	A violatio of the law. An offense against persons or property. The act is considered to be against the government - referred to in a lawsuit as "the people prosecuted by the state."	Robbery, rape, accessories to crime, blackmail, extortion.
4.	Defamation	Slander and libel. (Untruthful written or oral statements.)	Injuring the good name of another by telling falsehoods about that person to a third person.
5.	Defendant	Person accused of a crime or tort.	Party being sued.
6.	Ethics	The set of moral values and principles that guides an individual's conduct.	The nurse provides service with respect for the dignity of all people without regard to their nationality, race, creed, color or status.

LEARNING ACTIVITIES - continued

	WORD	DEFINITION	EXAMPLE
7.	Expert witness	Person having special training or experience who assists a judge and jury to establish standards of care.	Physican or expert in special field. This person could be a nurse, student or person with experience in the area being questioned.
8.	False imprisonment	The unlawful detention of a person against his/her wishes.	Keeping a patient hospitalized until all bills are paid.
9.	Felony	A crime punishable by imprisonment in a state or federal penetentiary for more than one year.	Armed robbery, murder.
10.	Fraud	Willful and purposeful misrepresentation that could or has caused loss or harm to persons or property.	Misrepresentation in order to obtain a nursing license.
11.	Good Samaritan Law	Law that holds nurses and physicians exempt from legal action when aiding a person during an emergency situation if reasonable judgment and care is given.	Assisting auto accident victims using good judgment at level of training.
12.	Invasion of privacy	Violation of a person's right to be left alone and have certain personal matters kept from public view.	Taking pictures of a malformed child without parental permission.
13.	Lawsuit	A legal action in a court of law.	
14.	Liability	An obligation or duty to act in such a manner that injury will not occur to another person, to be held accountible and responsible to another in such a way that breach of duty could result in civil or criminal punishment.	
15.	Libel	Untruthful written statement about a person that subjects him/her to ridicule or contempt.	Inaccurate, untruthful, statements in patient's chart concerning another nurse or physician.

LEARNING ACTIVITIES - continued

	WORD	DEFINITION	EXAMPLE
16.	Litigation	Process of a lawsuit.	
17.	Malpractice	An act of negligence committed by a professional person such as a physician, nurse, dentist.	Giving a medicine by an inappropriate route.
18.	Mandatory Nurse Practice Act	A law that requires a nurse to be licensed in order to practice nursing.	
19.	Manslaughter	Recklessly causing death of another person, certain categories of second-degree murder.	Killing a person without intention.
20.	Misdemeanor	An unlawful act of a less-serious nature than a felony, punishable by fine, imprisonment or both usually for less than one year.	Shoplifting.
21.	Murder	Illegally killing another person.	First-degree with forethought. Second degree-without previous deliberation.
22.	Negligence	Carelessness, failure to act as an ordinary, prudent person, or the act of doing something a reasonable person would not do that causes injury to another.	Leaving a confused, disoriented, unsteady person alone in a bathroom.
23.	Plaintiff	Person or government bringing a lawsuit against another.	
24.	Precedent	A case serving as an example for future cases.	
25.	Respondent superior	The master-servant rule that states an employer is legally liable for his/her employees.	A hospital is liable for an employee's negligent conduct during employment.
26.	Slander	An untruthful oral statement about a person that subjects that person to ridicule or contempt.	Making derogatory statements about patients, co-workers, physicians.

LEARNING ACTIVITIES - continued

	WORD	DEFINITION	EXAMPLE
27.	Standard of care	Those acts performed or omitted that an ordinary, prudent nurse would have performed or omitted.	Measure against which a defendant's conduct is compared. For example: following specific established guidelines on how to perform a sterile-dressing change.
28.	Deposition	Sworn testimony obtained out of courtroom.	
29.	Tort	An intentional or unintentional civil wrong against an individual or property.	Invasion of a patient's privacy.
30.	Licensure	Legal permit allowing one to practice a profession.	Practical nurse's license.
31.	Statue of limitations	A legal limit on the time allowed for filing suit in civil matters, usually measured from the time of the wrong or from the time when a reasonable person would have discovered the wrong.	

Exercise

Directions: Complete the following exercise. Be prepared to talk about your answers in a class discussion. Answers can be found in the preceding information.

1. Nurses are primarily concerned with what type of law?
   a. Public law
   b. Civil law or private law
2. The Good Samaritan Act applies to what situations?

   ____

   ____

3. Describe the difference between negligence and malpractice.

   ____

   ____

LEARNING ACTIVITIES - continued

4. Define statute of limitations.

____

____

5. What law requires a nurse to be licensed in order to practice nursing?

____

ACTIVITY #2. The Legal Process and Liability

Directions: Read the following.

In the eyes of the law, negligence is carelessness. Before negligence can be determined, a standard of care must be determined by deciding what a reasonably prudent person would or would not have done under similar circumstances. Standards of care are given by an expert witness. In cases involving nursing practice, another nurse may be requested to act as an expert witness to describe what standards of care could be expected under similar circumstances. The expert witness is not called upon to testify either for or against the defendant but merely to describe standards that will assist the court and jury to arrive at a fair decision.

Two important considerations are involved in determining negligence:

1. Knowing that failure to observe the standard of care could cause harm.

2. Demonstrating that harm resulted because of improper care.

Examples of negligent acts for which nurses have been held liable include injuries to patients resulting from burns, falls, medication errors, intravenous fluid infiltrations and failure to communicate.

NOTE: If a patient is injured through an unavoidable accident, the nurse will not be held liable.

The following is an example of a nursing act that could result in a lawsuit.

A nurse is about to administer penicillin to a patient. As the nurse approaches the patient with the medication, the patient says, "I hope that isn't penicillin because I'm allergic to it." If the nurse gives the medication anyway (whether or not the patient has an allergic reaction) that nurse's act could be considered one of negligence. A reasonably prudent nurse would be expected to know that penicillin reactions can be very dangerous and the nurse could be expected to foresee potential harm if the penicillin is administered to a person allergic to it. Keeping in mind this example, review FIGURE A on negligence and liability. Professional negligence is malpractice.

LEARNING ACTIVITIES - continued

NEGLIGENCE AND LIABILITY
FIGURE A

	ELEMENTS OF LIABILITY	EXPLANATION	EXAMPLE-GIVING MEDICATIONS
1.	Duty to use due care (defined by the standard of care).	The care that should be given under the circumstances (what the reasonably prudent nurse would have done).	A nurse should give medications accurately, completely and on time.
2.	Failure to meet standard of care (breach of duty).	Not giving the care that should be given under the circumstances.	A nurse fails to give medications accurately and completely and on time.
3.	Causing foreseeable harm	Knowledge that not meeting the standard of care will cause harm to the patient.	Giving the wrong medication or the wrong dosage will probably cause harm to the patient.
4.	Failure to meet standard of care (breach) causes injury.	Patient is harmed because proper care is not given.	Wrong medication causes patient to have a convulsion.
5.	Injury	Action results in harm to patient.	Convulsion or other serious complication.

Exercise

Directions: Complete the following exercise. Be prepared to talk about your answers in a class discussion. Answers can be found by rereading the material.

1. Who would probably be called as an expert witness in a lawsuit involving nursing practice?

   ____

2. What two important considerations are involved in determining negligence?

   a. ______________________________

   b. ______________________________

3. Name two examples of negligent acts for which nurses have been held liable.

   a. ______________________________

   b. ______________________________

4. Name the five elements of a lawsuit that must be present to determine a case.

   a. ______________________________

   b. ______________________________

LEARNING ACTIVITIES - continued

c. ____________________

d. ____________________

e. ____________________

ACTIVITY #3. Legal Aspects

Directions: Read the following.

Good Samaritan Laws

Most states have enacted good samaritan laws that relieve physicians, nurses and in some instances lay people from liability in certain emergency situations. Good samaritan legislation encourages health professionals, who by chance are present at the scene of an emergency, to render assistance to the injured and attempts to overcome liabilities for negligence by physicans, nurses and others. To be covered under the good samaritan law, a health care professional cannot expect payment for services rendered.

These samaritan statutes have been enacted for a variety of legal, ethical and moral reasons. It is generally accepted that there is no legal duty to assist a stranger in time of distress. However, if a person causes distress to another, he or she has a legal duty to assist the injured party. In our society it is a generally recognized moral duty to help any person in distress and the American Medical Association includes a provision to recognize this duty.

The law does require that anyone who volunteers aid to another in distress assumes a legal responsibility to exercise reasonable care and skill in rendering such aid, but does not cover acts of gross negligence or willful misconduct. Care rendered is to be provided at the level of training only. For example, an LPN would not be covered by the Samaritan Act if he/she attempted to perform a tracheotomy on a person with an airway obstruction.

SOURCE: Health Law Center and Streiff, Charles J. Nursing and the Law, Rockville, Maryland: Esquire Aspen Systems Corp. 1975.

Incidents

Because of the many numbers of incidents in health care facilities, studies have been performed to identify:

1. why incidents occur.
2. when incidents occur.

It has been found that the primary cause of incidents is a change in routine.

Situations causing a change in routine include:

1. A new on a unit or a float nurse.
2. A telephone call that interrupts thoughts.

LEARNING ACTIVITIES - continued

3. A nurse is very busy or tired.
    a. Understaffed units
    b. Double shifts
4. A new or changed procedure.

The reasons incident reports are filed are to:

1. document the incident.
2. provide information for statistics.
3. provide information for insurance purposes.

Be familiar with the policies of different institutions on the use of these forms.

A signed special consent form is needed for many procedures. It should have no abbreviations, the full legal signature of witness and patient, and date and time signed. It is necessary for the following:

1. Major or minor surgery that involves entry into the body, either through an incision or one of the natural body openings.
2. All procedures in which anesthesia is used.
3. Nonsurgical procedures involving more than a slight risk of harm to the patient-such as, mylograms, arteriograms, pyelograms.
4. Procedures involving the use of cobalt and x-ray therapy.
5. Electroshock therapy.
6. Experimental procedures.
7. All other procedures that require specific explanations to the patient by the staff. When in doubt prepare a consent form.

Student Nurses

As a part of their educational program, student nurses are entrusted with the responsibility of providing certain kinds of nursing care to patients. When liability is being assessed, a student nurse serving at the hospital in a patient-care unit is considered an employee of the hospital. The nursing student will be personally liable for negligence if injury results, and under the doctrine of respondent superior the hospital also will be liable for any harm suffered.

LEARNING ACTIVITIES - continued

Although this may seem a harsh rule at first, student nurses are held to the standards of competent professional nurses when performing nursing duties. In several decisions, the courts have taken the position that anyone who performs duties customarily performed by professional nurses is held to the standards of professional nurses.

Every patient has the right to expect competent nursing services, even if the care is provided by students as part of their clinical experience. It would be unfair to deprive patients of compensation for injury because the hospital has undertaken to utilize students to provide nursing care.

What if the student nurse's negligence occurs while performing a task the student was not yet capable of performing in a manner consistent with the standards of competent professional nurses? In this situation, the supervisor, whether a designated clinical instructor or the nurse in charge of the unit where the student is working, can be found to have deviated from the standard of competent nursing practice applicable to a supervisor and can be held liable.

Until it is clearly demonstrated that student nurses are competent to render nursing services without increasing the risk of injury to patients, there must be more supervision than is ordinarily provided for professional nurses.

Narcotics and Dangerous Drugs

The Federal Bureau of Narcotics and Dangerous Drugs, which is under the Justice Department, is responsible for enforcing the control of narcotics, habit-forming drugs and experimental drugs.

1. Proof of Use

   The narcotic sheet, by law, must be kept for 3 years, and the patient's chart and records kept for 25 years. The burden of proof of the administration of a narcotic is on the unit. This means that you must sign for all control drugs on a special sheet. This should be done when you take the medication from the locked compartment. If, for any reason, you do not give a dose or part of a dose you have prepared, it is wasted and recorded as "wasted." In these cases, a witness must watch you destroy the medication and co-sign the narcotic sheet! BE CAREFUL. Learn the following rules.

   a. Never sign anything unless you actually see the drug.

   b. Always count narcotics to be certain records are correct before accepting the narcotic keys.

   c. Sign for all controlled drugs before leaving the medicine room.

   d. Never sign the narcotic sheet if the narcotics count is not correct.

   e. Do not unwrap individually wrapped (unit - dose) medications until you are at the bedside. Then, if the patient refuses the medication, it can be returned to the original container.

LEARNING ACTIVITIES - continued

f. Before going off duty, count narcotics with the oncoming shift. Both shifts should sign indicating that records and drugs do check out at that time.

g. As with all medications, give only those you prepare.

REMEMBER: Careless handling of narcotics could lead to serious trouble for you. If a nurse is convicted on a narcotic charge, the nurse will:

1. have his/her nursing license suspended.

2. be subject to fine and imprisonment.

Discharge Medications

If anyone leaves the hospital with unlabeled drugs, he/she can be arrested, possibly convicted of a crime and sent to jail. For this reason, you must not send hospital drugs home with the patient. Have the physician write a prescription for new medication and return the unused medication to the pharmacy for reissue, relabeling or credit. All discharge medications must have: a prescription number, physician's name and directions for use. If you give a patient the medication he/she was taking in the hospital, you are dispensing drugs without a license and committing a crime. An exception would be medications that are normally purchased over-the-counter. Medicines brought to the hospital with the patient must be sent home or labeled and removed from the patient's bedside unless an order is received from the physician stating the patient may take own medicines.

Miscellaneous Precautions

Precautionary procedures vary from facility to facility; however, the following general statements should apply in most facilities.

1. Verbal orders are not legally acceptable. Orders must be in writing and signed by the physician. Check hospital policy and procedure book - exceptions are emergencies.

2. Telephone orders are not legal unless signed by the physician on the next visit. There is an element of risk in taking telephone orders, so be certain to write down the orders and read them back to the physician. Check hospital policy and procedure book.

   NOTE: Many facilities do not allow an LPN to accept a telephone order. The order should be signed by an RN. Check your hospital policy.

3. Standing orders are not legal until signed by the physician. Check hospital policy and procedures.

4. If you cannot read a physician's writing, you must contact the physician for clarification. Merely checking with another nurse is not adequate.

LEARNING ACTIVITIES - continued

5. If you think that a physician has ordered an incorrect dose of medication, you must contact the physician for confirmation. Check with the PDR or pharmacist. Do not give the medication until you contact the physician.

6. The use of abbreviations in charting is legal if you are using abbreviations the facility normally uses. Check the hospital list.

7. In Arizona, an LPN is not legally covered for starting IV's or for giving IV medication.

8. If you do not know how to administer a needed treatment, you must ask for help. If you carry it out incorrectly and injure the patient you are legally liable. Always refer to procedure book to review procedure and always follow prescribed standards of care!

9. A patient is legally entitled to privacy, so DO NOT discuss a patient with anyone except in the line of duty.

10. A patient's right to privacy also applies to physical care. This is one reason why you must screen the patient, close the door, use bath blankets and take other appropriate steps to provide privacy. Nurses are likely to be the first to hear complaints about embarrassment caused by lack of privacy. You may not be the person providing care but every nurse is responsible for the patient's privacy.

Legal Reporting Obligations

All societies wish the best environment for their members. In our country the government helps protect its people by health regulations and statutes. The role of the nurse is important because the nurse is in a position to observe and gather information about social concerns such as certain diseases, parental neglect, mistreatment of individuals and criminal acts. Every professional has the obligation to relay this information to the appropriate authority so that corrective measures can be taken. As a general rule, the person making the report under authorized command will be protected by the doctrine of privilege (trust).

It is your responsibility as the nurse to report the following to the person in charge:

1. Abused children
2. Diseases in newborns
3. Communicable diseases
4. Births out of wedlock (in some states only)
5. Gunshot wounds
6. Criminal acts
    a. Attempted suicide
    b. Assault

LEARNING ACTIVITIES - continued

c. Rape

d. Unlawful dispensing or taking narcotic and controlled substances

Information concerning these events is also used in statistical reports and studies.

Exercise

Directions: Complete the following exercises. Be prepared to talk about your answers in a class discussion.

1. In order to be immune from negligence lawsuits under the Good Samaritan Act, there should be no expectation of ____________________________ .

2. What have studies indicated to be the primary reason that incidents occur?

   ____

3. Name two situations in which a written consent form would need to be prepared.

   a. ____

   b. ____

4. Why are student nurses held liable for their acts of negligence?

   ____

   ____

5. What are your actions as the nurse when a narcotic needs to be "wasted"?

   a. ____

   b. ____

6. Careless handling of narcotics could lead to what actions?

   a. ____

   b. ____

7. All unused medications should be returned to the ____________________, after a patient has been discharged.

8. Place a T for TRUE or an F for FALSE in the space indicated for the following statements.

   ___ A. Verbal orders are not legally acceptable except in emergencies.

   ___ B. If you cannot read a physician's writing it is acceptable to ask another physician.

LEARNING ACTIVITIES - continued

___ C. If you think that the physician has ordered an incorrect dose of medication, it is advisable to call the physician immediately before first checking other resources, such as the PDR or pharmacist.

___ D. LPN's are not legally covered for starting IV's or giving IV medications in Arizona.

___ E. The safest road to follow for any procedure is to follow standards of care.

___ F. It is legally acceptable to discuss a patient's condition on the phone with that patient's friend without first checking with the patient.

___ G. If an unclothed patient says, "It's OK to leave the curtains open during my bath," the nurse should maintain the patient's privacy anyway and close the curtains, explaining her duty to do so.

___ H. The nurse is responsible to report draining wounds that appear infected to the person in charge.

ACTIVITY #4. Licensure

Directions: Read the following.

Nurse-Licensing Laws

1. Licensure

Licensure is the process by which a specifed, competent authority grants permission to a qualified individual or entity to perform specific activities that could not be performed without a license. Health care personnel must meet certain predetermined standards in order to practice their professions. Only after these standards have been met do they have the legal right to practice a health profession and use a specified health practitioner's title such as LPN.

The objectives of licensing laws are to limit and control admission into various health occupations and to protect the public from unqualified practitioners by enforcing standards of practice within the professions.

The Arizona State Board of Nursing is responsible for licensure in the state of Arizona. The board consists of five members appointed by the governor. Their responsibilities are to:

a. determine eligibility for licensing and relicensing.

b. enforce licensing laws.

c. suspend, revoke or restore licenses.

d. accredit schools of nursing.

e. examine nursing candidates.

LEARNING ACTIVITIES - continued

2. License Renewal

   In Arizona, a person who holds a valid, current license or permit may practice as a "licensed practical nurse." This license must be renewed annually by December 31st. (Temporary permits expire on the date stated on the permit.) If your license is lost or stolen, you must notify the state Board of Nursing immediately!

3. Licensure by "Reciprocity" (Endorsement)

   Licensure is determined by states. Since state laws differ, problems arise with interstate licensure. If a nurse moves from one state to another, the nurse should request the second state for licensure by "reciprocity." His/Her credentials are then evaluated and often the nurse does not have to repeat the examination and/or parts of training to be licensed by the second state.

4. License Suspended or Revoked

   The board may revoke or suspend any license to practice nursing if the licensee is, after a hearing, found:

   a. guilty of fraud or deceit in obtaining a license to practice nursing.

   b. to have been convicted of a felony or any immoral act.

   c. guilty of involvement in criminal acts.

   d. guilty of unprofessional conduct, unfit or incompetent by reason of negligence.

   e. addicted to the use of habit-forming drugs, mentally incompetent or physically unsafe for nursing duty.

      NOTE: Losing a malpractice case, by itself, has no effect on the license to practice. Malpractice is not grounds for revocation of a license, however, repeated claims may cause the board to feel the nurse is incompetent and revoke her/his license.

5. Functions of an LPN

   The Arizona State Board of Nursing has listed the following functions as those a licensed practical nurse can perform under the supervision of a registered nurse or a physician.

   The LPN participates in the planning, implementation and evaluation of nursing care by:

   a. providing emotional and physical care.

   b. observing, reporting and recording.

   c. performing with skill and judgment nursing procedures for which she/he has been prepared.

LEARNING ACTIVITIES - continued

d. assisting with rehabilitation.

Specific nursing duties will vary from state to state, and health care facilities also have specific duties assigned to each member of the medical team. The nurse is responsible for knowing what specific skills are performed or are not performed by an LPN in that particular institution, bearing in mind the nursing laws of that state. A nurse who engages in activities beyond the legally recognized "scope of practice" risks prosecution for violating that state's medical practice act. The hospital that employs the nurse could also be held criminally responsible for aiding and abetting the illegal practice.

Exercise

Directions: Complete the following exercises. Be prepared to discuss your answers in class. Answers can be found in the preceding information.

1. What are the objectives of licensing laws?

   a. ____

   b. ____

2. What are the functions of an LPN according to the Arizona State Board of Nursing?

   a. ____

   b. ____

   c. ____

   d. ____

3. It is the nurse's responsibility to be familiar with all duties while working in a particular state and facility. What are the risks if the nurse engages in activities beyond the nurse's "scope of practice"?

   ____

   ____

   ____

ACTIVITY #5. Ethics for Nurses

Directions: Read the following.

Ethics has been defined as a set of values or principles that guides an individual's conduct. Various professions set standards of practice for their members through codes of ethics. The purpose of an ethics' code is to promote high standards of competence among a profession's members. Ethical codes cannot be enforced by

LEARNING ACTIVITIES - continued

committees but each professional is expected to adhere to the code of his/her professional society. The code of ethics adopted and revised by the American Nurses' Association consists of ten statements, as follows.

1. The nurse provides services with respect for the dignity of man, unrestricted by considerations of nationality, race, creed, color or status.
2. The nurse safeguards the individual's right to privacy by judiciously protecting information of a confidential nature, sharing only that information relevant to care of the patient.
3. The nurse maintains individual competence in nursing practice, recognizing and accepting responsibility for individual actions and judgments.
4. The nurse acts to safeguard the patient when the patient's care and safety are affected by incompetent, unethical or illegal conduct of any person.
5. The nurse uses individual competence as a criterion in accepting delegated responsibilities and assigning nursing activities to others.
6. The nurse participates in research activities when assured that the rights of individual subjects are protected.
7. The nurse participates in the efforts of the profession to define and upgrade standards of nursing practice and education.
8. The nurse, acting through the professional organization, participates in establishing and maintaining conditions of employment conducive to high-quality nursing care.
9. The nurse works with members of health professions and other citizens in promoting efforts to meet health needs of the public.
10. The nurse refuses to give or imply endorsement to advertising, promotion, or sales for commercial products, services or enterprises.

SOURCE: Fuerst, Wolff and Weitzel. Fundamentals of Nursing, Philadelphia, PA: J.B. Lippincott Co., 1974.

Exercise

Directions: Complete the following exercises. Be prepared to discuss your answers in class.

1. What is the purpose of a code of ethics? ________________________________

____

____

____

LEARNING ACTIVITIES - continued

2. The code of ethics for nurses was adopted by: ______________________________

ACTIVITY #6. Medical Records

Directions: Read the following.

Medical records are maintained primarily to provide accurate and complete information about the care and treatments of patients. They are the principle means of communication between physicians and nurses on ancillary services of the medical team relating to patient care. The records are also a valuable aid in court proceedings.

The nurse's responsibility with the patient's chart is particularly important because nurses see patients more than any other medical professional. They are in a position to constantly observe a patient's illness, responses, displays of discomfort and general condition. Regulations concerning charting and medical records vary from state to state, but all licensing regulations stipulate that all records must be accurate and complete. The increasing incidence of personal-injury suits and the expanding acceptance of life, accident and health insurance have made medical records important evidence in legal proceedings. Failure to comply with charting standards could result in negligence lawsuits. The following examples illustrate failures to comply with standards of charting that are considered negligent.

1. Failure to observe and record symptoms.
2. Failure of nurse to complete medical history.
3. Failure to clarify a physician's order.
4. Failure to use appropriate abbreviations and follow prescribed standards of care.

Some important guidelines concerning the nurse's legal responsibilities are:

1. Make neat, legible entries with dates and times.
2. Use standard abbreviations only.
3. Leave no blank lines - note errors appropriately.
4. Always sign chart with legal signature following each entry.
5. Chart all valuables and their disposition, especially at admissions and discharge.
6. Chart all nursing observations, such as:
    a. level of consciousness
    b. general condition
    c. dressings, drainage, tubes, IV's
    d. changes, better or worse, in patient's condition

LEARNING ACTIVITIES - continued

e. activity and toleration

f. diet, appetite and toleration

g. physicians' or other medical team members' visits

h. Test E treatments - procedure and toleration

i. time patient enters and leaves unit and mode of transportation

j. specimens to be tested

k. all p.r.n. treatments and medicines and their effects

l. incidents

m. response to treatments, medicines, activities

n. observations pertinent to the patient's diagnosis.

o. complaints offered by patient and nursing actions taken.

p. patient's response to nursing care, such as baths, patient teaching, examinations.

q. any patient attitudes or actions that are out of the ordinary.

r. interactions of patient with family members.

Exercise

Directions: Complete the following exercises and discuss them in class with your instructor.

Charting

Chart the following incidents as you would if you had been the nurse on duty. All necessary facts are not supplied. Call on your imagination for these facts. Show your completed nursing notes to your instructor for suggestions and comments.

REMEMBER: Protect yourself when you chart.

SITUATION 1: You are the LPN on duty from 11-7 on Ward 200 South. At 2330, Mr. Hardhead, who had a herniorrhaphy yesterday, feels he must go home immediately because of family problems. You enter the room to find Mr. Hardhead having a moderate amount of abdominal pain, but dressed and ready to leave.

LEARNING ACTIVITIES - continued

Nurse's Notes

SITUATION 2: You are the LPN working as the nurse-in-charge at the Hard-to-Lift Nursing Home. At 8:00 p.m. Mrs. Blame, a black patient with dark skin, fell in the bathroom. You pick Mrs. Blame up and put her to bed. You notice that her right arm is swelling rapidly and is very painful. You attempt to call her doctor but the doctor does not answer. You call your supervisor who instructs you to elevate the arm and to apply ice.

Nurse's Notes

SITUATION 3: Last night, you made an error in charting. You charted:

0100 patient apparently sleeping.
0200 patient apparently sleeping.

In reality, the patient was not sleeping at 0100 but was restless, perspiring profusely and by 0200 was crying but denying any pain. Make the corrections for the above situation in a legally acceptable way.

LEARNING ACTIVITIES - concluded

SITUATION 4: Mr. Highroller has just entered Room 206. Your task is to admit him to the unit. His diagnosis is acute renal failure. In the space below write the necessary admitting entries. Mr. Highroller has brought medicines with him and is wearing many apparently expensive rings.

Nurse's Notes

SITUATION 5: Mrs. Recovered has been discharged by her physician. After you have escorted her to her sister's car by wheelchair, you need to chart your final nurse's notes. In the space below chart on this situation, keeping in mind your legal responsibilities to Mrs. Recovered concerning doctor's appointments, medicines, diet, activity, valuables and so forth.

Nurse's Notes

COMMUNITY HEALTH

Module B - The Aging

unit 16

RATIONALE

Aging persons make up a minority group in our society that is increasing in size every year. It is essential for the nurse to understand the aging and their special needs.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify the emotional and physical changes of the aging.
2. Identify terms concerning the aging.
3. Identify diseases and conditions common to the aging.
4. Demonstrate knowledge of specific skills and techniques when providing physical, social and emotional care to the aging person in the clinical area.
5. Demonstrate knowledge of guidelines, routines and activities useful in caring for the aging in a long-term care facility.

LEARNING ACTIVITIES

Directions: All the information you will need to complete this module is included in your textbook Geriatrics, A Study of Maturity by Caldwell & Hegner and in the Trainex filmstrip #580, "Crisis in Aging."

ACTIVITY #1. Overview of the Aging Person

Directions: You have been learning many new words that will aid your integration into the nursing world. To be able to communicate in the field of geriatrics, you will need to be familiar with the following terms and definitions.

1. AGING: Term used to refer to the progressive changes resulting from the passage of time. A term now commonly used to refer to the elderly.
2. ELDERLY: Elderly is the label frequently used when grouping persons for specific services provided by social service agencies. Usually refers to persons 65 and older.

LEARNING ACTIVITIES - continued

3.	EXTENDED-CARE FACILITY:	A facility in which the residents receive skilled nursing care 24 hours a day. It requires registered nurse supervision supplemented with licensed practical nurses. The facility includes nursing care and rehabilitation.
4.	GERIATRICS:	A term for the medical treatment of age-associated diseases.
5.	GERONTOLOGICAL NURSING:	Nursing of the aging.
6.	GERONTOLOGIST:	An M.D. who specializes in diseases and treatment of aging persons.
7.	GERONTOLOGY:	The study of the aging process.
8.	MEDICARE:	A program administered by the Social Security Administration that provides medical care for the aged.
9.	POVERTY:	$2,650 or less annual income for one person per year.
10.	SHELTERED-CARE FACILITY:	A facility, other than a hospital, maternity home or nursing home, for two or more unrelated persons who are not acutely ill and who therefore, do not need skilled nursing care. Included are homes for the aged in which personal care (assistance with meals, dressing, medications, etc.) is rendered.
11.	SKILLED NURSING FACILITY:	Facility, usually other than a hospital, providing skilled nursing care, rehabilitation services and other related health services.
12.	SOCIAL SECURITY:	A government program including provisions for old age and survivors insurance, contributions to state unemployment insurance and old age assistance.
13.	STEREOTYPING:	Assuming that all members of a specific group conform to a fixed description. For example, believing that all elderly people are cranky.

Our society defines old age as the period of life after age 65. Age, however, is an inaccurate indication of an individual's physical or mental status. There are more than 22 million Americans over the age of 65, and approximately 95% of these people live independently and are able to manage their lives without difficulty. Because health professionals generally come into contact with people who are ill and in need of help, they may lose sight of how many others are living successfully at home.

LEARNING ACTIVITIES - continued

Among the aging, one in five lives in a poor household and at least half have not completed eight years of formal education. Historical factors are important in our present generation of the aging especially for those born near the turn of the century when "survival of the fittest" was a popular social theory and the protestant ethic of hard work and self-sacrifice was the dominant religious influence in America. Due to these influences, many aging persons resist the idea that the government is responsible for aging citizens. Many persons view retirement and economic problems as personal failure. Social Security and medicare benefits may be considered "hand outs" that only add to an aging person's feelings of uselessness. Many older Americans are foreign-born and retain a cultural identity that may be difficult for younger generations to understand. Since the aging population is so diversified, nurses need to try to be aware of how each person has lived in the past, what the priorities and values of each person are and what the future hopes of each one might be.

Rural Aging

Five percent of the aging live on farms, another 35% live in rural towns. Stress in these areas is often considerably lower than in urban areas because the air is fresh and people can be out of doors more often and can generally get an adequate amount of exercise. The residents of these areas tend to be more stable so the aging frequently have a long-time circle of friends and neighbors. These friends and neighbors tend to care about and for their elderly neighbors. Rural areas also have a negative side, such as:

1. Transportation tends to be inadequate.
2. Medical facilities may be inadequate or available only in larger neighboring or distant towns.
3. Income is often very low. Until 1970, farmers were excluded from private pensions and social security benefits.

SOURCE: Hess, Patricia and Day, Candra. Understanding the Aging Patient, Bowie MD: Robert J. Brady Company, 1977.

Housing for the Aging

It is estimated that 30% of the aging in this country live in below-standard housing. This group often does not have the extra money for needed repairs and improvements on their homes. These homes are frequently paid for but are older and need repairs and improvements to maintain standard conditions.

Income for the Aging

Would you agree that people who are poor all their lives are going to be poor in their old age? This will be true unless by chance their children become wealthy, they are befriended by a wealthy person, or they marry a wealthy person in their older years. This, of course, does happen but for less than 1% of older Americans.

LEARNING ACTIVITIES - continued

It is also true that many people become poor after they become old or retire. Because most retired and elderly people live on fixed incomes, their financial security has been reduced by high inflation. Frequently medical expenses are high and the elderly must pay for services that previously they could do for themselves.

The aging constitute approximately 10% of the population but are 20% of "poor America." Eighty-five percent of the poor are white, while the other 15% are minority members who often exist in even more extreme poverty. Minority women tend to be the poorest of all.

Not all elderly are poor. Many have excellent incomes from savings, investments, etc. combined with retirement funds and social security.

Income Sources for the Aging

	SOURCE	AMOUNT
1.	Employment	29%
2.	Retirement	46%
3.	Public Assistance	4%
4.	Investments	15%
5.	Relatives	3%
6.	V.A. Benefits	3%

Social security benefits are often the only source of income for the profoundly poor and that income is not adequate to meet their needs. The average social security check is $218 a month for a single person and $372 a month for a couple. Many domestics were not covered by social security until 1950.

Exercise

Directions: Plan a budget for a single elderly man whose income is $218 per month. Discuss this budget with other students in a class discussion.

1. food ______________________________
2. medication ______________________________
3. rent ______________________________
4. clothing ______________________________
5. transportation ______________________________
6. entertainment ______________________________

LEARNING ACTIVITIES - continued

7. utilities ______________________________

8. miscellaneous ______________________________

ACTIVITY #2. Cultural Considerations

Directions: Read the following.

Aging is a natural process - an inevitable part of living. Those reaching advanced years do so because they have been able to meet life's challenges with success. A point to keep in mind is that the basic needs of the aging person are the same as those of all human beings and that the aged need to be regarded as valued members of society. Ethnic and cultural influences affect the elderly as they do every group of our society.

Blacks make up the largest minority group in this country. Since this group is basically English speaking, we have much more information about them than many other minority groups. There are many older blacks who do not live with their spouses. Many experts blame welfare laws for this situation. These laws made it necessary for the men to leave home in order for the family to receive welfare. Another reason more older blacks live alone is their shorter life expectancy, especially for black men.

Nationwide, life expectancy is now 76 years for women and 69 years for men. The elderly represent 10% of the population. Generally blacks, hispanics and American Indians have a lower life expectancy than whites.

Hispanics are the second largest minority group in the United States. This minority group is comprised of Cubans, Central and South Americans, Mexicans, Puerto Ricans, and other Spanish-speaking persons. The majority of Hispanics in this country are of Mexican descent. About 80% live in the urban areas of Arizona, Colorado, New Mexico, Texas and California.

Sociocultural problems contributing to low life expectancy are:

1. poverty.
2. poor housing.
3. lack of medical care.
4. lack of education.
5. change in traditional life styles.
6. pride that often prevents the elderly from seeking financial help or professional medical help.
7. lack of knowledge of Social Security or Medicare.
8. language barriers. The Hispanic elderly frequently need to know and speak English when applying for financial assistance or traditional medical care.

LEARNING ACTIVITIES - continued

American Indians make up the next largest minority group. Approximately 45% of American Indians live in urban areas and 30% live in rural areas (reservations). The majority of American Indians lives in the West in Oklahoma, Arizona, California and New Mexico.

Sociocultural problems contributing to lower life expectancy among American Indians include:

1. poor economic status.
2. unemployment, frequently as high as 45%.
3. hunger and malnutrition.
4. inadequate medical care in local facilities.

In many tribal groups "medicine men" provide an essential service to those who become ill. Sometimes the "treatment" of the medicine man or woman is the only consistent source of medical care.

Frequently American Indians do live a long and productive life. This may be true because many American Indians have:

1. a strong will to survive.
2. a holistic approach to living that often makes longevity possible. (The body functions as a whole rather than as individual parts. For example, the mind and body interact in relation to environment.)

Exercise

Directions: Complete the following exercises. Be prepared to discuss your answers in class.

1. Our society defines old age as the period of life after age ________________ .
2. What is the major income source for the aging? ________________________
3. List five problems that contribute to low life expectancy in minority groups.
   a. ____
   b. ____
   c. ____
   d. ____
   e. ____

LEARNING ACTIVITIES - continued

4. Generally, when do health professionals come into contact with aging persons?

____

____

____

ACTIVITY #3. Mental Health and the Aging

Directions: Read the following and view the Trainex filmstrip #580, "Crisis in Aging."

The well-being of any individual is influenced by the interaction of physical, psychological, cultural, economic and environmental factors. Difficulties in any of these areas can intensify already present physical ailments. Aging persons are especially prone to stresses. These people frequently have to deal with:

1. loss of spouse, children, siblings, friends.
2. neglect from family.
3. emotional stress from physical and psychological changes.
4. decreased income.
5. inflation.
6. loss of occupation and prestige because of retirement.
7. loss of self-esteem.
8. increased physical ailments.

The process of aging varies with each individual. Generally, the loss of cells and the loss of physiological reserve are the major processes of aging. The loss of reserve power means that the elderly's ability to recover under stress is reduced, leading to a need for extended periods of rest and only mild to moderate activity. In order for the aging to cope with these changes, they frequently must reduce levels of activity.

The incidence of psychiatric disorders increases with age. The aged make up the largest single group of patients in mental hospitals. Many of the problems that produce stress in old age come from conflicts that have not been adequately resolved throughout life. Therefore, good mental hygiene when younger is an important factor in achieving a happier old age. Psychiatric symptoms in the aging may be a result of a metabolic, toxic, infectious, cardiac, respiratory or drug-induced disorder.

Some common disorders are:

Organic brain syndrome: A process of interference with the metabolic processes of the brain. Signs are restlessness, anxiety, suspicion, agitation, excitement and confusion. Hallucinations and distortions of reality may also be present.

LEARNING ACTIVITIES - continued

Depression: Depression is the most common mental-health problem for the aging. The symptoms you may observe are:

1. feelings of helplessness.
2. sadness.
3. lack of vitality.
4. frequent feelings of guilt.
5. loneliness.
6. boredom.
7. constipation.
8. sexual disinterest.
9. impotence.
10. insominia.
11. early morning fatigue.
12. loss of appetite.

People who are depressed will be sad and tearful. Besides the obvious physiological symptoms mentioned they may also be confused, indecisive and irritable. They may spend much time in devaluing themselves or considering suicide.

These moments and feelings may be triggered by loss of loved ones, by disappointments and criticism, real or imagined, or by holidays and anniversary dates of the death of loved ones.

The transition to a new environment such as an institution, hospital, long-term care facility, etc. may bring on temporary states of anxiety, confusion and disorientation. Senile behavior may be displayed without physical causes. The patient may be misjudged as senile or confused when there is only fear, depression and a feeling of hopelessness present. The nursing approach needs to be positive. The disoriented and anxious patient must be assisted in reorienting and adjusting to a new situation. Some ways to assist the aging person to cope with new situations are:

1. Provide a fixed schedule for those aging persons that need such a routine for security.
2. Frequently orient the person to place and time.
3. Explain all new treatments and procedures.

LEARNING ACTIVITIES - continued

4. Allow sufficient time for activities (being hurried promotes feelings of confusion and anxiety).

5. Provide diversional activities to prevent idle hours during which the patient can escape into the past.

Exercise

__Directions:__ Complete the following exercises. Check your answers by rereading the material.

Place a T for TRUE or F for FALSE in the appropriate space next to the statements below.

____ 1. The process of aging is the same in everyone.

____ 2. The incidence of psychiatric disorders increases with age.

____ 3. Depression is the most common mental-health problem for the elderly.

____ 4. Allowing an elderly person to withdraw will assist him/her in coping with stresses.

____ 5. A generalized complaint of many elderly people is fatigue.

ACTIVITY #4. Physical Changes in the Aging

Directions: Read the following tables that show the body's systematic changes during the aging process. For further information refer to your text Geriatrics, A Study in Maturity, units two and four.

SYSTEM	CHANGES	RESULTS	COMMON CLINICAL DIAGNOSIS
1. Nervous System	Loss of nerve cells. Decreased blood flow to the brain. Changes in hearing, vision, smell.	Loss of pain perception. Brain atrophy. Need for glasses, hearing aid, loss of sense of taste. Slowing reflexes.	Injuries unnoticed, fractures occur. Personality changes and disorders. Withdrawal and isolation, Dementia, parkinsonism. Prone to falling, imbalance. Cataracts/glaucoma
2. Cardiovascular	Cardiac output decreased. Fat deposits around heart and valves. Aorta loses elasticity. Decreased hematocrit and R.B.C. volume.	Poor reaction to stress. Loss of myocardial flexibility. Increased resistance to blood flow. Anemias	Cerebrovascular accidents. Congestive heart failure. Coronary/artery disease, sclerosis, gangrene, hypertension, leukemias.
3. Respiratory	Lungs lose elasticity. Degenerative changes in larnyx.	Lung volume 25 to 30% - gas exchange reduced. Voice becomes weaker and high-pitched.	Shortness of breath. Emphysema. Respiratory-tract infections. Bronchitis.
4. Excretory	Blood flow to kidney reduced due to decreased cardiac output. Loss of smooth muscle tone.	Less urine production. Concentration or difficulties emptying bladder.	Renal failure. Increased incidence endometrial carcinoma.

SYSTEM	CHANGES	RESULTS	COMMON CLINICAL DIAGNOSIS
5. Gastrointestinal	Loss of teeth. Diminishing gastric enyzmes. Decreased nutrient and mineral absorption. Decreased peristalsis.	Impaired swallowing. Oral sores. Poorly digested food. Altered bowel habits.	Anorexia. Gallbladder disease, dysphagia. Indigestion - constipation. Vitamin deficiences, anemia.
6. Musculoskeletal	Structual changes in ligaments, joints and bones. Weakness and discomfort due to lack of use.	Stooped posture. Atrophy	Osteoarthritis. Rheumatoid arthritis.
7. Endocrine	After menopause. estrogenic activity changes. Metabolic changes affect glucose tolerance.	Vaginal wall thins, secretions diminish. Hyperglycemia.	Vaginitis. Diabetes.
8. Integumentary	Loss of adipose, water in skin. Sebaceous glands less active. Peripheral blood circulation decreased. Loss of pigmentation of hair and decreased blood circulation to scalp.	Sagging, wrinkling of skin. Dry, scaling skin. Decreased nutrition to skin. Graying of hair. Dryness.	Psoriasis, dermatitis, senile pruritus. Slower healing responses. Alopecia.
9. Body as a Whole	Responds slower to acid-base abnormalities. Decrease in total body potassium. Slower and less vigorous response from immune system.	Myocardial changes. More susceptible to endogenous infections.	MI, EKG changes.

LEARNING ACTIVITIES - continued

Exercise

Directions: List one change of each system of the body in relation to aging.

SYSTEM	CHANGE
1. Nervous system	
2. Cardiovascular system	
3. Respiratory system	
4. Excretory system	
5. Gastrointestinal system	
6. Musculoskeletal system	
7. Endocrine system	
8. Integumentary system	

ACTIVITY #5. Nutritional Needs of the Aging

Directions: Read the following.

The nutritional requirements of the aging are similar to those of other adults except that caloric intake should be reduced since energy needs diminish with age. Commonly people gain weight as they become older because of their slowing metabolism and lessened activity. The recommended energy allowance for ages 51 and older is 2400 calories for men and 1800 calories for women. Studies indicate that the nutrients lacking in most aging persons diets are calcium, ascorbic acid and riboflavin. The allowances for protein and most minerals and vitamins are the same as for younger adults. However, protein needs are often not adequately met because meats and cheeses tend to be more expensive and more difficult to prepare and eat.

The nurse is likely to see many problems concerned with the nutritional needs of older persons. The nurse needs to be alert to these problems and use patience, kindness and ingenuity in solving them. Some of these problems are listed below.

1. An inability to chew can result from poorly fitting dentures or absence of teeth. Denture statistics show that 50% of Americans over the age of 65 years have lost all of their teeth.

2. Appetite declines in later years because the senses of smell and taste decrease. Chronic disease and medications often interfere with appetite.

3. Complaints of heartburn, belching and indigestion and flatulance are often associated with specific foods such as onions, spices and tomatoes. These foods should be avoided if they are found to create discomfort.

LEARNING ACTIVITIES - continued

4. Constipation is a common problem related to lessened activity and reduction of muscle tone in the gastrointestinal tract. Constipation is worsened by the intake of soft, low-fiber foods and failure to drink sufficient fluids.

5. Chronic diseases of the heart, kidney, circulatory system, gastrointestinal tract and joints require the need for modified diets.

6. A lifetime of poor dietary habits adds to nutritional deficiency that can result in fatigue, anemia, fragility of bones, poor wound-healing and reduced resistance to infection.

7. Living alone, physical handicaps, inability to shop, low income, frustration, boredom and fear of the future reduce the desire to eat or the ability to prepare adequate meals. Many aging depend on economical foods such as carbohydrates that can be prepared with little effort.

8. Faddism and misinformation are responsible for much poor nutrition. Older persons especially fall prey to fads and quakery promises of good health, vigor and even cures for diseases.

Merely because the patient is elderly does not mean that the patient's food should be soft and bland. An adequate well-balanced regimen should be planned and presented. The basic five food groups should provide all the nutrients needed by the aging person. Some points to keep in mind when planning meals for older persons are:

1. Consider food likes and dislikes when preparing or chosing from a menu.

2. Use fried, rich, seasoned and flavored foods carefully, according to tolerance.

3. Adjust meals to chewing capability and condition of mouth, gums, teeth, etc.

4. Serve small, frequent meals when appetite is poor.

5. Coffee and teas may produce insomnia and should be served early in the day.

6. Encourage a liberal fluid intake and increase fiber content in diet if constipation is a problem.

Nutritional education, socialization, periodic health checks and recreational activities are all important in assisting the aging to promote and maintain optimium health.

Exercise

Directions: Complete the following exercises. Discuss your answers with other students in a class discussion. Answers can be found by rereading the material.

Place a T for TRUE or an F for FALSE beside the following statements.

IN YOUR OPINION

____ 1. The aging person's appetite improves when meals are shared.

____ 2. Loss of appetite is experienced by those living alone.

LEARNING ACTIVITIES - continued

____ 3. Less expensive cuts of meat are as nutritious as more expensive cuts.

____ 4. It is better for the aging person to fry foods to allow good nutritional intake.

____ 5. The nurse can best meet the nutritional needs of a patient by learning the patient's personal food preferences.

List five problems in meeting the nutritional needs of the aging person.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________

Name six points to keep in mind when planning meals for the aged.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________

ACTIVITY #5. Nursing Support of the Aging Person

Directions: Read the following.

Inactivity is a serious threat to the aged and can cause muscle atrophy and general body deterioration. Exercise maintains good muscle tone throughout the body, including the heart. Active and passive range of motion of all major muscle groups is necessary to prevent atrophy.

A major cause of death and disability among the aged is accidents. Persons 65 and over account for:

26% of all accidental deaths
10% of all bed-disability injuries
13% of all hospitalized accident patients
11% of the costs of accidents

LEARNING ACTIVITIES - continued

The National Safety Council stresses that persons over 65 years are less able to:

1. perceive danger because of reduced sensory abilities.
   EXAMPLE: Hearing or seeing automobiles.

2. interpret warning signs in time because of slowing mental ability.
   EXAMPLE: Untied shoe laces while descending stairs.

3. move rapidly and in a coordinated manner.

4. compensate for physical impairment because they do not wish to burden others or admit their aging process.
   EXAMPLE: Need for glasses or hearing aid.

Patient Assessment

The nurse must evaluate the aging person in order to develop a nursing-care plan. One of the best methods of evaluating and assessing the patient is through communication. In addition to being aware of medical problems, the nurse should consider the following in assessing the aging person.

1. Consider physiological factors.
   - a. Sight, hearing, mobility, capacity to care for him/herself.
   - b. Eating habits, sleeping, elimination and activity.
2. Consider socioeconomic factors.
   - a. Family structure, friends, social activities.
   - b. Economic status and supports.
3. Consider psychological factors.
   - a. Alertness or orientation.
   - b. Self-image attitudes.
   - c. Psychological defenses.
   - d. Interests or hobbies.
   - e. Future plans and hopes.

All nursing activities are directed toward restoration of the ability for self-care. Many elderly have lost most or all contacts and the nurse may be the only "caring" person available. Touch and verbal stimulation are helpful to the aging person who needs to maintain touch with reality and know that someone cares about him/her.

LEARNING ACTIVITIES - continued

Exercise

Directions: Complete the following exercises. Answers can be found by rereading the material.

1. Inactivity in the aged person can cause muscle ______________________.
2. The major cause of death and disability among the aged is ____.
3. In developing a nursing-care plan, what factors are necessary to consider when evaluating the aging person?

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

ACTIVITY #7. Drug Therapy

Directions: Read the following.

A wide variation exists in the absorption, distribution, metabolism and excretion of drugs in older patients because of the reduced capacities of their livers, kidneys, circulatory and nervous systems. The degenerative changes in these organ systems cause many aging persons to show unusual reactions and possibly to develop complications to medications.

1. Sedatives and hypnotics can lead to confusion, delusions, hallucinations, falls, addiction and agitation in the aging person and should be administered in smaller doses.
2. Opiates, such as morphine, should be administered with caution since they act as respiratory depressants. If the respiratory rate drops below ten respirations a minute, the drug should be held and the physician should be notified.
3. When administering aspirins, consider stomach upset, electrolyte depletion and possible serious bleeding caused by prolonged prothrombin (clotting) time.
4. Tranquilizers can cause hypotension, cerebral depression and agitation in the aging person.

LEARNING ACTIVITIES - continued

5. Depression is common among the aged and central nervous stimulants may be prescribed to relieve apathy, lethargy and to restore a sense of control. These drugs are given in small doses since they have a tendency to exaggerate confusion and paranoia in some patients.

6. Since the heart conduction system is less effective in older patients, even small doses of digitalis can cause arrhythmias, gastrointestinal and mental symptoms without warning. Digitalis is also not tolerated well because of decreased kidney function, decreased myocardial potassium (hypokalemia) and lower body weights of aging persons.

7. Antibiotics may not be as effective against lung infections in the elderly due to their decreased lung capacity. Antibiotics may cause severe intestinal infections and diarrhea as result of changes in intestinal organisms.

8. Cortisone-like hormones are given with caution since older patiens are susceptible to gastric ulceration and hemorrhage.

9. Alcohol may be used for its relaxant, sedative and appetite-stimulant properties. But since it has the potential for dependence, it should be used in moderation.

10. Diuretics are responsible for many instances of dehydration, electrolyte imbalance, weakness, vertigo and nausea. Diuretics should be given early in the day to prevent interference with sleep.

11. Laxatives must be given several hours after meals to prevent interference with vitamin absorption in the GI tract.

Every nurse has basic responsibilities when administering medications of any kind. The basic responsibilities are to know:

1. medication name.

2. desired effect.

3. possible side effects.

4. possible interactions.

5. nursing actions.

Accurate patient identification is necessary at all times with every patient when administering medications.

The nurse must be able to explain the facts of each medicine for home use. The nurse must be on constant alert for changes in the patient's physical or mental responses to drug therapy.

Some side effects that are frequently seen are: nausea, vomiting, vital-sign changes, dizziness, visual disturbances, mood swing, insomnia, irritability.

LEARNING ACTIVITIES - continued

In general remember that:

1. The aged have a greater tendency to retain sodium.

2. Medicines do not circulate and are not excreted as rapidly in the aged, therefore, their reactions may be more severe.

General Information Related to Administration of Parenteral Drugs

1. All changes in medication should be explained carefully before administering the drug.

2. The buttocks is the site of choice for I.M. injections.

3. Use shorter needles for thin patients.

4. Observe, report and record localized reactions.

General Information Related to Administration of Oral Drugs

1. Remain with patient until you are certain the pill has been swallowed and check the mouth if necessary.

2. If medication tastes unpleasant, mix it with foods or fluids to camouflage the taste.

3. Pills may be crushed and mixed in juices, ice cream and applesauce. Do not use a patient's favorite food since medicine can cause the food to be bitter.

4. Liquids can be mixed in juices. This is a opportunity to increase the patient's fluid intake. Many medications must be diluted to prevent GI upset. **EXAMPLE:** potassium.

5. If the patient is able to take his/her own medicine, place the medicine cup on the table near the patient rather than placing the cup in the patient's hand or mouth. By reaching, lifting and holding the medication container, the patient increases aim activity (ROM).

General Information Related to Administration of Rectal Medications

1. Follow prescribed administration procedure for rectal drugs.

2. Remain with the patient, encouraging the patient not to expell the medicine.

If you have on your team one or two elderly patients taking medications, dispense their medicines last. They will need and take more of your time. When you are working on a geriatric unit, plan to spend time with each patient. Do not hurry, but take time to visit with each person. In time you can make those observations and assessments that need to be charted on the record.

LEARNING ACTIVITIES - continued

Because aging people often take many medications, you need to be aware of the common problems that occur when patients have medicines at home they must take. These common problems are:

1. forgetfulness.
2. poor understanding of the directions.
3. inability to read.

The nurse needs to carefully explain the importance of following physicians' directions. Bright tags or color-coded bottles and caps may be helpful to the patient in distinguishing between medications at home. For example:

1. Take one pill from the bottle with the red cap each morning.
2. Take a pill from the green bottle with every meal.
3. Take the capsule from the blue-capped bottle on even days only.

If the patient seems unwilling or unable to remember to take medicines properly, the patient should have help from a family member or friend and the physician needs to be aware of the potential problem.

Self-medication is common among the aged and many medicines can be bought over-the-counter. As a general rule, no drug is excluded from geriatric use but dangerous situations can occur if drugs are taken indiscriminately. It is the nurse's responsibility to properly administer medicines in the hospital and to help patients understand how to safely take medications at home.

Exercise

Directions: Complete the following exercise. Discuss your answers with other students in a class discussion. Check your answers by rereading the material.

1. What kind of reactions are common in the aging after receiving sedatives and hypnotics?____

   ____

2. What is the major risk in administering morphine sulphate? ________________

   ____

   ____

3. Name two side effects of aspirin.

   a. ____

   b. ____

LEARNING ACTIVITIES - continued

4. Hypotension is a side effect of what class of medications? ____________________

5. What medicine is not tolerated well in the aging person and can cause hypokalemia, cardiac arrythmias, gastrointestinal and mental symptoms?

6. With moderation ____________________ may be used as an appetite stimulator.

7. ____________________ should not be given close to meals because they can interfere with vitamin absorption.

8. What do you, as the nurse, need to look for in patients receiving diuretics?

9. List the responsibilities of every nurse when administering medications.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

10. List five common side effects of drug therapy that the nurse must watch for and record.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

    e. ____________________

LEARNING ACTIVITIES - continued

11. The ______________________ is the site of choice for IM injections.

12. When is it necessary for the nurse to check identification of patients before giving medicines? ____

____

13. Name the five responsibilities of giving medicines.

    a. ____

    b. ____

    c. ____

    d. ____

    e. ____

14. Name two common problems that can occur when aging persons take medicines at home.

    a. ____

    b. ____

15. What is the nurse's responsibility when sending home prescribed medicines with a patient? ____

____

____

____

ACTIVITY #7. Recreation and Rehabilitation

Directions: Read the following.

"Rehabilitation is helping individuals do as much as they can, as well as they can, as long as they can."

Rehabilitation begins by preventing further physical or phychological deterioration. Frequent positioning prevents pressure sores and range of motion exercises prevent atrophy. Encouraging activity helps promote independence and initiative in the patient.

LEARNING ACTIVITIES - continued

Unless a patient sees him or herself as a person of worth and value, planning care for that patient cannot achieve maximum benefit. A person can be assisted to having feelings of self-worth by:

1. Including patient in planning care.
2. Establishing realistic short and long range goals.
3. Establishing a sincere, caring attitude between nurse and patient.
4. Treating the patient with respect and dignity.
5. Encouraging social interaction.

The nurse is often assisted by occupational and physical therapists, family members, volunteers, and various community efforts to promote the goals of recreation and rehabilitation of the elderly.

Summary of the Principles Underlying the Nursing Management of the Aging

1. Nursing care must be individualized, taking into consideration the patient's past experiences, needs and individual goals.
2. Realistic and attainable goals, which are understood by patients, are set to help them gain a sense of accomplishment and purpose.
   a. Engage in mutual goal-setting when possible.
   b. Communicate frequently to patients the planned goals of their care.
   c. Support patients' beliefs in their internal resources.
3. Patients need to be active participants in their own plan of care.
   a. Consult patients for their preferences.
   b. Ask their opinions.
   c. Encourage patients to make choices and decisions.
   d. Avoid making decisions for patients, this promotes low self-esteem, dependency and depression.
   e. Support patients during their periods of anxiety.
   f. Urge patients to remain active.
   g. Nursing activities need to be done with patients rather than for them.
4. The nursing approach must communicate to patients that they have value as individuals and status as members of the family and society.

LEARNING ACTIVITIES - concluded

5. Nursing modifications and compromises imposed by the physiological limits of aging must be made in the medical and nursing management of the patient.

6. The individuality of patients should be encouraged to preserve their identity and sense of control.

   a. Encourage them to have and use their personal possessions to help bridge the gap between the past and present.

   b. Give patients time to express their feelings.

   c. Help patients retain the social graces.

   d. Help patients cope with thoughts of death.

SOURCE: Brunner and Suddarth, J.B. Textbook of Medical-Surgical Nursing, Third Edition, Philadelphia, PA: Lippincott Company, 1975.

7. The aging should be kept in the mainstream of life to prevent physical, emotional and mental deterioration.

   a. Stimulate mental acuity.

   b. Share your world with the patient.

   c. Remember their preferences, accept their idiosyncracies.

   d. Provide them with opportunities to do some of the tasks of daily living (water plants, wash own hose).

   e. Provide meaningful diversional activity.

   f. Give them something to look forward to.

8. The patient's potentialities should be utilized.

   a. Select activities that are in keeping with life-long interests.

   b. Do not attempt to alter life-long character and behavior patterns.

   c. Give patients time to listen, to learn and to adapt.

COMMUNITY HEALTH

Module C - Community Health

RATIONALE

Because of increased medical costs, the health care delivery system is having to undergo many changes in order to continue to meet the needs of consumers. Health care providers are increasingly stressing the preventive approach to medicine. The nurse will play a major role in these changes through his/her involvement with community resources and home health agencies. The nurse has a unique opportunity to view the patient as a whole in relationship to the environment.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Identify terms used by health workers.
2. Choose a community health agency and identify the organizational and financial structure, purpose and the nurse's role in that agency.
3. Identify specific trends of community health.

LEARNING ACTIVITIES

Directions: All the information you will need to complete this module is included in this module. You may want to use a local community resource book to assist you in class discussions concerning various community agencies.

ACTIVITY #1. Terminology

Directions: Learn the following terms.

1.	HEALTH:	A state of complete physical, mental and social well-being - not merely the absence of disease or infirmity (World Health Organization's definition).
2.	HEALTH CARE DELIVERY SYSTEM:	A system that provides health care to individuals.
3.	MORBIDITY:	The condition of having a disease. The morbidity rate is the number of cases of a specific disease in a calendar year for every 100,000 people in the population.
4.	MORTALITY:	The death rate. Ratio of number of deaths to a given population.
5.	NONOFFICIAL AGENCY:	An agency supported by gifts, grants, endowments, etc.

LEARNING ACTIVITIES - continued

6.	NURSING IN THE COMMUNITY:	The individual is the object of care.
7.	NURSING THE COMMUNITY:	The community as a whole is the object of care.
8.	OFFICIAL AGENCY:	A tax-supported agency.
9.	AMBULATORY SURGERY:	An outpatient surgical center.
10.	VITAL STATISTICS:	Official record of births, deaths, morbidity, mortality, etc.
11.	NATALITY:	Ratio of births to a given population.
12.	EPIDEMIC:	Disease or condition that affects many people at the same time in the same geographical area.
13.	ENDEMIC:	A disease prevalent in or restricted to a particular nation, region, locality or group.

ACTIVITY #2. Factors Influencing Health Needs Today

Directions: Read the following.

According to the Arizona Department of Health Services and Vital Records, the most frequent causes of death in Arizona are heart disease, cancer, accidents and strokes. They are followed by influenza and pneumonia, suicide, alcoholism, respiratory diseases and diabetes. How does this compare with health service records for your community?

The largest number of deaths in Arizona occured in the age group 70-74 years and the fewest deaths in the age group 5-9 years. In general, women have a greater life expectancy than man. The overall trend indicates that people are living longer now than in the past. There will be a growing emphasis in the future on health care for aging persons.

In 1978 in Arizona, 43% of all deaths to persons aged 1-44 years were accidental. The future may bring greater stress on safety regulations and increased trauma facilities and public emergency systems. See Figure 16C for death percentages in Arizona.

LEARNING ACTIVITIES - continued

The suicide rates in Arizona and the United States have followed different paths in the past ten years. The national rate for suicide has remained stable, but the Arizona rate has shown a drastic increase. Suicide is the second leading cause of death among adolescents in Arizona, with the rate three times higher for boys than for girls.

The rate of infant mortality is decreasing. Improved and more efficient methods of care are available for premature, critically ill newborns and infants.

World, national, state and local business and economics influence health care a great deal. Recent high inflation and the development of highly specialized health care centers are factors leading health care towards the increasing importance of group medical facilities, preventive care, shorter hospital stays and increased outpatient services.

Can you think of other factors that will affect health needs in the future?

SOURCE: Arizona Department of Health Services Vital Records and Information Services, 1740 West Adams Street, Phoenix, AZ, 1978.

ACTIVITY #3. Trends in Resources of the Health Care System

Directions: Read the following.

1. The rapid growth of government public health agencies has influenced many trends in the health system.
    a. The World Health Organization (WHO) serves as an international meeting place for health discussion, planning and action. UNICEF is a supplemental agency of WHO.
    b. At the national level agencies include: Department of Health and Welfare (DHW), Departments of Agriculture, Labor and Justice and the Veterans Administration.
    c. Local level agencies are state and county health departments, including state and county health facilities, neighborhood health centers and infection-control centers.
2. Strong voluntary official and non-official health agencies provide a wide variety of health care to the public.
3. An important trend in health care is toward nurses' assuming higher levels of responsibility in assisting the physician in patient care. Because of an increase in patient numbers, more responsibility is being assumed by the LPN and the nursing assistant.
4. Health insurance is increasingly available.
    a. Patients are more informed today than in previous times about health care. Their expectations of the health care system are different. The patient demands better care. One response to these demands is health maintenance organizations (H.M.O.), whose purpose is to maintain health and to prevent illness as well as to care for the ill.

LEARNING ACTIVITIES - continued

b. Health maintenance insurance covers doctors' bills, office calls, medicines, outpatient medical care, physical examinations and eye glasses as well as hospitalization. Federal health care programs assist the elderly and medically indigent (poverty-stricken) through Medicaid, Medicare and tax-assisted programs to obtain health services.

5. Fewer physicians are in private practice.

   a. The current trend is toward specializations such as orthopedics, cardiology, etc. and group practice in or near large hospitals and medical facilities. The practice of physicians and nurses working together in group health settings encourages co-worker accountability and keeps medical standards high, since most individuals will not tolerate substandard medical practice among close co-workers.

   b. The physicians in private practice are subject to close observation by hospital staff, governing boards and through Professional Standards Review Organizations (PSRO) to maintain high quality medical care.

ACTIVITY #4. Patient-Centered Trends

Directions: Read the following.

Today we seem to be seeing a trend toward bringing the patient back into the central position. Evidence of this is found in the following.

1. Nurse clinicians or clinical specialists.

   a. These are exceptionally experienced and competent RN's who are able to make decisions and take therapeutic action in all stages of illness.

   b. They combine teaching and practicing basic and technical care, diagnosing patient needs and formulating plans for meeting these needs.

2. Improved care for the mentally ill and retarded.

   a. Local facilities are replacing large state institutions in providing:

      (1) early diagnosis and preventive services.

      (2) inpatient and increasing outpatient services.

      (3) rehabilitative services.

3. Increased services for alcoholics, drug addicts, unmarried and young mothers, juvenile and adult delinquents. These services are an outgrowth of the recognition that these individuals are in need of help.

LEARNING ACTIVITIES - continued

4. Expanded government and private rehabilitative services for the handicapped to:
    a. help prevent disability.
    b. treat and rehabilitate those already handicapped and/or disabled.
5. Expanded community health agencies that are:
    a. focused on the entire family.
    b. concerned with personal health, prevention of disease and education of the patient.
6. Improved health care for the chronically ill and the aging.
    a. Patient problems become more complex as chronic illness increases. Preserving the rights and the dignity of the permanently infirm and disabled is a challenge for every nurse, as well as for the entire community.
    b. Special needs for these people will include:
        (1) extensive home and ambulatory services.
        (2) greater quantity and higher quality of homes and services for the aging.
7. Improved emergency care.
    a. Better services will speed recovery and minimize suffering and disability resulting from a crisis.
    b. Emergency care trends include:
        (1) extensively trained paramedical personnel available for emergency services.
        (2) trained emergency medical technicians (EMT's) and paramedics operating ambulances and responding to emergencies with the highest quality immediate care available.
        (3) increasing numbers of emergency helicopter transport systems that will enable patients to obtain needed care as quickly as possible. Improved communications between health care facilities, both official and non-official, will assist agencies in providing a high standard of care to the public.
        (4) mobile cardiac units and advanced life-support systems that are able to provide highly technical services until transport to a medical facility is obtained.

LEARNING ACTIVITIES - continued

8. Reorganization of hospitals and medical centers.

   a. Trends are toward grouping patients and services according to diagnosis and severity of illness, such as neurology and respiratory units, intensive care units, coronary care units and postcritical care units.

9. Expansion of inservice and patient education programs.

   a. New and continuing education programs allow health care providers to keep up with changing technology and to offer answers to many questions and concerns related to patient care.

   b. Increasing numbers of medical facilities are encouraging patients to be involved in health-screening programs and health education and to become more aware of preventative measures concerning illness.

10. Increasing avalibility of physicians and health services.

    a. Physicians are contracting many services with agencies so they can provide a wider range of services, such as laboratories, diagnostic tests, etc.

    b. 24-hour outpatient services and crisis centers are increasing.

11. Limiting hospital expansion

    a. Arizona, and many other states, have health planning councils that must approve all additional hospital facilities. This helps prevent too rapid expansion and the duplication of expensive services that result in unoccupied beds and higher patients' bills.

12. Research in the nursing and medical fields is continually searching for methods that are more cost-efficient and improve patient care.

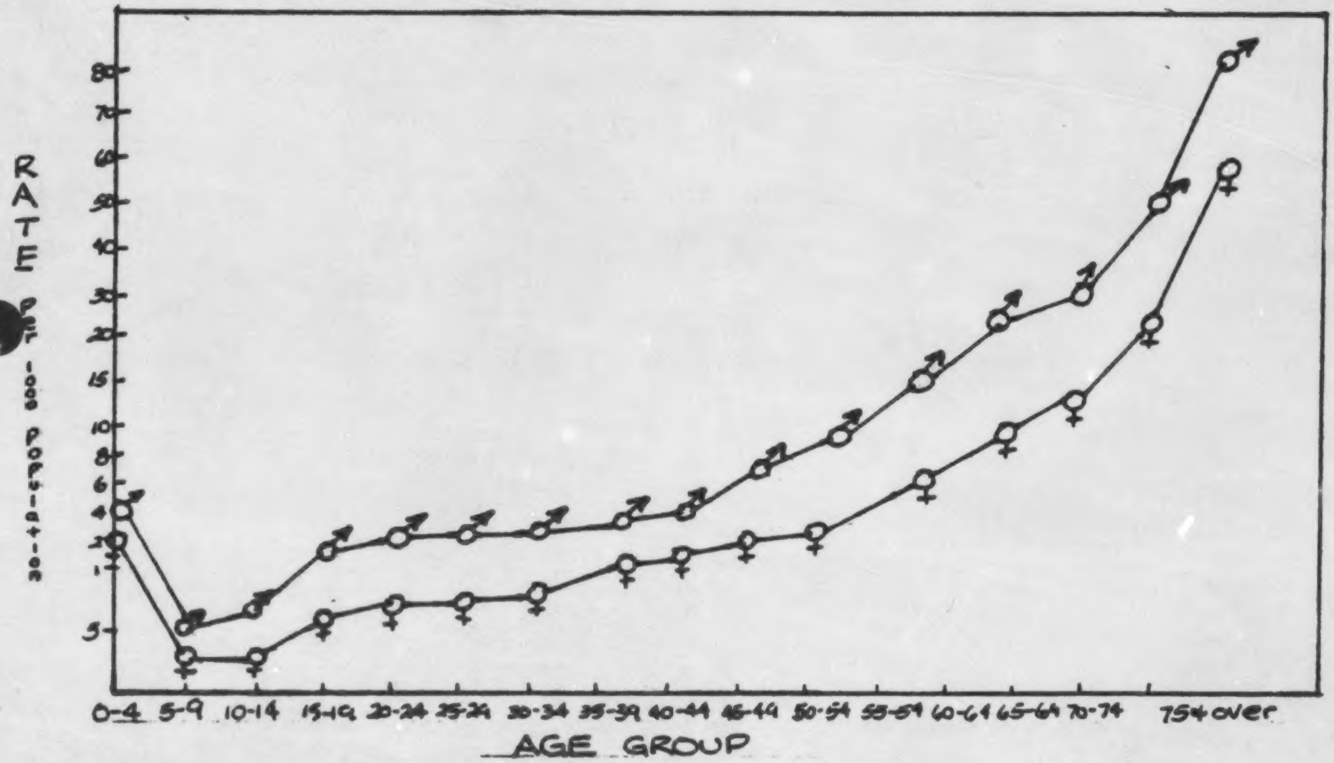
Advancing science and technology may depersonalize patient care in the future, and the nurse will be most involved in these changes of technology. Examples of increased use of equipment are:

1. Computers to provide crucial data in diagnosing, history taking and preventive therapy.
2. Body scans and nuclear studies for diagnostic procedures.
3. Patient monitoring by closed circuit televisions, cardiac telemetry and an increasing use of very complex equipment such as mechanical ventilators, dialysis units, surgical and emergency equipment.

LEARNING ACTIVITIES - continued

SUMMARY

Many health trends have been examined in this unit. All have the ultimate goal of providing a better health care system. Many of these programs and trends are expensive and it appears that the already high costs of health care will continue to rise. You, as a health care provider, need to be aware of the continual changes and issues in the medical field and system you are a part of. Look at the diagram below. Imagine that each ring of the circle represents a component, or part, of the health care system. Label each ring as representing the physician, the nurse, the patient, the hospital or other health facility or the environment. After you have labeled each ring, discuss your views with your classmates and instructor and your reasons for labeling the circles as you did.



Death rates by age and sex Arizona 1978

ACTIVITY #5. Review Exercise

Directions: Complete the following exercises. Discuss your answers in a class discussion.

1. What are the four major causes of death in Arizona?

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

LEARNING ACTIVITIES - continued

2. Describe the health care delivery system. ____________________

3. Name one local health agency. ____________________

4. Name three factors that affect health needs today and describe their influences.
   a. ____________________
   b. ____________________
   c. ____________________

5. Define the following terms in your own words.
   a. official agency ____________________
   b. nonofficial agency ____________________
   c. morbidity ____________________
   d. natality ____________________
   e. epidemic ____________________

LEARNING ACTIVITIES - continued

6. Name at least six trends that you feel may affect you the most in the health field.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

   f. ____________________

7. In your opinion, what would help the health care system provide high quality medical care and keep costs at a reasonable level?

   ____

   ____

   ____

   ____

   ____

   ____

ACTIVITY #6. Community Health Services

Directions: Read the following.

As a health care provider, you need to have some knowledge of the community resources available to assist you, your patients, family and friends when you are faced with a problem or need information and/or referral services.

A general resource guide to services in any city is the yellow page section of the telephone directory. If a particular service is needed, often agencies with the same goals and purpose are willing to provide information on how to contact related agencies.

Most major cities offer an information and referral service to the public without charge. This service can be found listed in the city telephone directory or by consulting information.

Crisis centers are available to offer counseling, information and referral service, often on a 24-hour basis. Increasing numbers of suicide, rape and child abuse centers are providing immediate attention to those in need. Fees may vary from agency to agency.

LEARNING ACTIVITIES - continued

It is helpful for you as a health care worker to be aware of community resources and services in the following areas. Look in a local resource book or the yellow pages and find a name and location for one agency that works with these problem areas. Discuss what you find with other members of your class.

1. Alcohol abuse
2. Drug addiction
3. Blindness/sight handicap
4. Mental retardation
5. Cancer
6. Disaster relief
7. Handicapping or crippling children's diseases
8. Children with learning diabilities
9. Displaced homemakers
10. Immunizations, well-baby checks
11. Heart disease
12. General health needs
13. Sexually transmitted diseases (STD's)
14. Veterans and dependents' health care needs
15. Long-term care for the aged
16. Drug abuse prevention/treatment
17. Suicide prevention
18. People in need of food
19. Mental health
20. Asthma
21. Family planning
22. Family problems
23. Unwed parents

LEARNING ACTIVITIES - concluded

After you have referred someone to an agency, it is important to obtain some feedback from the person you referred. You may need to suggest another resource. Negative or positive feedback will affect future referrals.

ACTIVITY #7. Community Health Experience

Directions: Read the following.

With your instructor's assistance, choose a community health agency you are interested in learning more about and visit this agency, following guidelines set by your instructor. The following questions can guide you in learning about the agency. After you have completed this agency visit, share your experience and discuss it with your class and instructor.

1. What is the primary purpose of the agency?
2. From what source does the agency receive its funding?
3. What or who is the governing board or decision-makers of the agency?
4. What are the criteria for client eligibility?
5. What services are offered by the agency?
6. Describe the role of the nurse in this agency.
7. Describe the effectiveness of the agency.
8. In your opinion, does the agency provide the services that support the purpose of the agency?
9. In your opinion, were the providers of the services professional and client-oriented?
10. Would you use this agency's services? Why or why not?
11. Did you feel accepted by the agency personnel?
12. Did you feel the experience was worthwhile? Why or why not?

POST TEST

Module A

Directions: Read each question and each possible answer. When you have decided which answer is best, circle the letter found in front of that answer on your answer sheet. DO NOT WRITE ON THIS TEST.

1. Nurses are primarily concerned with what area of the law?

   a. Public law
   b. Private or civil law
   c. Department of Corrections
   d. Equal Rights Amendment

2. An expert witness in a lawsuit may be:

   a. a nurse
   b. a physician
   c. a student nurse
   d. all of the above
   e. all but c

3. Professional negligence is:

   a. libel
   b. a misdemeanor
   c. litigation
   d. malpractice

4. The primary cause of accidents and incidents is:

   a. a routine is changed
   b. a nurse feels very confident
   c. a nurse does not follow guidelines
   d. lack of communication

5. A patient is scheduled for a diagnostic procedure in the GI lab tomorrow. You must obtain the patient's legal permission on a consent form. The acceptable legal words describing the procedure are:

   a. EGD
   b. G.I. scope
   c. esophagogastroduedenoscopy
   d. esophagastro

POST TEST - continued

6. Student nurses are held to the standards of competent professional nurses when performing nursing duties.

   a. Always since patients are entitled to the highest quality of care.
   b. Only if the student is an employee of that institution.
   c. Sometimes.
   d. Never, the respondent superior will always be responsible and liable.

7. Careless handling of narcotics could lead to:

   a. loss of license.
   b. loss of employment.
   c. fine and imprisonment.
   d. all of the above.

8. After a patient has been discharged, all unused medications:

   a. may be taken home by the nurse.
   b. should be saved on the unit and used for floor stock.
   c. may be given to the patient since it is paid for.
   d. should be returned to the pharmacy and credited to the patient's account.

9. If a nurse loses a malpractice case, the nurse will automatically lose his/her nursing license.

   a. Always.
   b. Sometimes.
   c. Malpractice is not grounds for revocation.
   d. All of the above.

10. It is acceptable practice for an LPN to hang an intravenous antibiotic only after the RN has prepared it and double-checked the medicine with another licensed person.

    a. TRUE
    b. FALSE

11. The purpose of a code of ethics is to:

    a. instill guilt for not adhering to the code.
    b. promote high standards of competence.
    c. provide standards for punishment.
    d. set standards of practice.
    e. b and d only.

12. Miss S, a patient, asks your professional opinion about her physician. Your best response would be:

    a. "Why do you want to know?"
    b. "Are you unsure of your physician's opinion?"
    c. "I have never liked Dr. A very much."
    d. "I really like Dr. A. He has a nice bedside manner."

POST TEST - continued

13. If a patient is injured through an unavoidable accident, the nurse is still held liable.

    a. TRUE
    b. FALSE

14. A patient is injured during physical therapy. After the patient returns to the unit, you discover a small laceration on the patient's knee. Who completes the incident report?

    a. The physical therapist.
    b. You.
    c. Change nurse.
    d. Transportation attendant.

On questions 15-21 match the column of explanations on the right with the appropriate term on the left by writing the appropriate letter on the lines provided at the bottom of your answer sheet.

____	15.	Battery	A.	Employer legally liable for his/her employees.
____	16.	Libel	B.	Untruthful written statements.
____	17.	Negligence	C.	Process of a lawsuit.
____	18.	Slander	D.	Untruthful oral statement.
____	19.	Litigation	E.	Carelessness or failure to act as a reasonable person.
____	20.	Lawsuit	F.	Forceful bodily contact without permission.
____	21.	Respondent superior	G.	Legal action in a court of law.

22. Elements of liability are:

    a. common sense, injury, failure to observe and report, failure to communicate and covering a mistake.
    b. standard of care, failure to meet standard, foreseeability of harm, failure of standard causes injury.
    c. standard of injury, seeing injury occur, foreseeability of punishment, injury and neglect.
    d. actual harm, failure to meet foreseeability, breach of foreseeability, harm and duty.

POST TEST - continued

23. Good samaritan legislation encourages health professionals to render assistance at the scene of emergencies and to:

    a. assist health professionals in earning extra money while off duty.
    b. provide a way for health professionals to practice their emergency skills.
    c. attempt to overcome liabilities for negligence for health care professionals.
    d. assist health care professionals in maintaining a rapport with the community.

24. Incident reports are filed to:

    1. name the person in error.
    2. document the incident.
    3. provide information for statistics.
    4. provide information for insurance purposes.
    5. determine severity of incident to rate mode of punishment.

    a. all of the above
    b. 2, 3, 4 only
    c. 1, 2, 3, 5
    d. 5 only

25. The "burden of proof" that a narcotic or controlled substance was administered is:

    a. on the unit chart and on the patient's chart.
    b. on the patient's chart only.
    c. at the pharmaceutical company.
    d. a and c only
    e. none of the above

26. All discharge medications must have:

    a. price, phone number, doctor's address, patient's name.
    b. pharmacy label number, patient's name, medicine dose.
    c. prescription number, doctor's name, directions for use, patient's name.
    d. doctor's phone number, refill number, patient's address.

27. Telephone and verbal orders are not legally acceptable, except in clearly defined emergencies.

    a. TRUE
    b. FALSE

28. Standing orders are not legal until signed by a physician.

    a. TRUE
    b. FALSE

POST TEST - concluded

29. It is your responsibility as a health care professional to report:

    a. severe depression.
    b. gunshot wounds.
    c. battered wives or husbands.
    d. abused animals.

30. The agency responsible for licensing practical nurses and protecting the public from unqualified practitioners is:

    a. judiciary system.
    b. legislatures.
    c. American Nurses Association.
    d. the state Board of Nursing.

31. It is acceptable and ethical to represent yourself as a nurse to promote a commercial product in advertising.

    a. TRUE
    b. FALSE

32. The principle means of communication between physicians, nurses and ancillary services (such as PT, OT, RT, etc.) is:

    a. AM report.
    b. the medical chart and medical records.
    c. verbal.
    d. the hospital distribution system.

33. Nurse practice acts are primarily intended to:

    a. protect the public.
    b. protect the nurse.
    c. regulate professional relationships.
    d. define medicine and its practices.

34. A standard of care is:

    a. standard of the levels that a nurse should care about his/her patients.
    b. set of regulations defining medical activities.
    c. an act performed or omitted that an ordinary prudent nurse would have performed or omitted.
    d. a set of rules applied to nurses.

35. You, as an LPN, will be legally expected to:

    a. provide emotional and physical care.
    b. observe, report and record.
    c. perform skills with judgment.
    d. assist with rehabilitation.
    e. all of the above.
    f. none of the above.

ANSWERS TO POST TEST

Module A

1. b
2. d
3. d
4. a
5. c
6. a
7. d
8. d
9. c
10. b
11. e
12. b
13. b
14. b
15. f
16. b
17. e
18. d
19. c
20. g
21. a
22. b
23. c
24. b
25. a
26. c
27. a
28. a
29. b
30. d
31. b
32. b
33. a
34. c
35. e

POST TEST

Modules B and C

Directions: Read each question and each possible answer. When you have decided which answer is best, circle the letter found in front of that answer on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The terms "elderly" and "geriatrics" refer to what approximate age group?

   a. age 25 and over
   b. age 55 and over
   c. age 45 and over
   d. age 65 and over

2. What source provides the highest percentage of income to the elderly?

   a. Retirement
   b. Employment
   c. Public assistance
   d. V.A. benefits

3. The most common mental health problem for the aging is:

   a. organic brain syndrome.
   b. constipation.
   c. depression.
   d. paranoia.

Match the body systems on the left with the appropriate illness that affects that system on the right for questions 4-11. You will need to pencil "h" on your answer sheet.

____	4.	nervous	a.	bronchitis
____	5.	cardiovascular	b.	alopecia
____	6.	respiratory	c.	vaginitis
____	7.	endocrine	d.	nocturia
____	8.	integumentary	e.	anorexia
____	9.	excretory	f.	parkinson's
____	10.	musculoskeletal	g.	hypertension
____	11.	gastrointestinal	h.	osteoarthritis

POST TEST - continued

12. The recommended amount of calories for ages 51 and older per day is:
    - a. 2000 calories for men, 1400 calories for women.
    - b. 3000 calories for men, 1500 calories for women.
    - c. 5000 calories for men, 4000 calories for women.
    - d. 2400 calories for men, 1800 calories for women.

13. A common side effect of aspirin is:
    - a. GI and stomach upset.
    - b. respiratory inhibition.
    - c. prolonged clotting time.
    - d. agitation.
    - e. a and c only.
    - f. all of the above.

14. An elderly patient taking a diuretic must be monitored for what side effects?
    - a. Vertigo and weakness.
    - b. Hypokalemia.
    - c. Nausea.
    - d. Dehydration.
    - e. All of the above.
    - f. None of the above.

15. It is acceptable for a nurse to identify a patient he/she is administering medicines to by name only, if the nurse is really sure of the patient's identity.
    - a. TRUE
    - b. FALSE

16. Due to the degenerative changes of the liver, kidneys, circulatory system and the nervous system, many aging persons show unusual reactions and develop complications to medicines.
    - a. TRUE
    - b. FALSE

17. The nurse can assist the patient to have feelings of self-worth by:
    - a. including patient in planning care.
    - b. establishing realistic short-range goals.
    - c. encouraging social interaction.
    - d. treating the patient firmly
    - e. all of the above.
    - f. a, b and c.

POST TEST - continued

18. Which of the following is not considered a correct nursing measure for treatment of the aging:

    a. encourage the patient to make choices.
    b. help the patient cope with thoughts of death.
    c. establish a caring rapport with the patient.
    d. urge the patient to remain inactive.

19. The nurse should attempt to alter life-long character and behavior patterns of an aging person.

    a. TRUE
    b. FALSE

20. Prevention of the diseases of old age is usually directed toward:

    a. preventing the onset of disease.
    b. preventing or minimizing the disability the disease produces.
    c. prohibiting all physical exercise.
    d. providing for early retirement.

21. A nutrient commonly lacking in the diets of many aging persons is:

    a. protein
    b. minerals
    c. carbohydrates
    d. calories

22. Side rails are placed in the high position for aging patients primarily:

    a. so they can be used as hand holds and to assist the patient's moving.
    b. as a precautionary measure, since many patients become disoriented.
    c. because of hospital regulations.
    d. because the patient will rest better with the rails up in place.

23. Rehabilitation of any patient should include:

    a. ADL training
    b. psychosocial understanding
    c. therapeutic exercise
    d. providing encouragement and praise for accomplishment
    e. evaluation of the total patient
    f. all of the above
    g. none of the above

POST TEST - continued

24. Mr. Smith is a 74-year-old patient who has just been admitted to your unit with the diagnosis of a recent CVA. Doctors orders are: bedrest, soft, bland diet, VS Q 4 hr. codiene 30 mg. Q 4 hr. for pain.

    During Mr. Smith's first weeks of hospitalization, he is very susceptible to:

    1. decubitus
    2. pneumonia
    3. pancreatitis
    4. pylonephritis
    5. cystitis

    a. 3
    b. 2 and 4
    c. 1 only
    d. 1, 2, 5

25. Thirty milligrams of codiene is equivalent to which apothecary measurement?

    a. 1 grain
    b. 1/2 grain
    c. 1/4 grain
    d. 1/8 grain

26. Medicines circulate more rapidly and are excreted faster in the aging than in a younger person.

    a. TRUE
    b. FALSE

27. - 31. Every nurse has five basic responsibilities when administering medications of any kind. Write these five basic responsibilities on the lines provided at the bottom of your answer sheet.

32. Morbidity is defined as the:

    a. ratio of number of deaths to a given population.
    b. number of cases of a specific disease in a year in a given population.
    c. label of a horror movie.
    d. increased number of bids on an object.

33. A nonofficial agency is supported by:

    a. gifts, grants, endowments.
    b. organized crime.
    c. taxpayers' money.
    d. United States financial corporations.

POST TEST - continued

34. The largest number of deaths in Arizona is due to:

    a. heart disease, cancer, accidents, strokes.
    b. influenza, pneumonia, suicide, alcoholism.
    c. homicides, diabetes, insect bites.
    d. all of the above.
    e. none of the above.

35. Many trends influence the health care system. Choose the answer that is not considered a current trend.

    a. Rapid growth of public health agencies.
    b. Grouping of medical facilities and physicians.
    c. Improved emergency care.
    d. Business and economics.
    e. Large increase of many new hospitals and medical facilities.

36. A general resource guide to community resources is:

    a. community telephone directory yellow pages.
    b. asking an agency with the same purpose or goal.
    c. directory assistance.
    d. information and referral agencies.
    e. ask a friend or co-worker.
    f. all of the above.

37. Ambulatory surgery is:

    a. surgery while the patient is ambulating.
    b. an outpatient surgical center.
    c. a surgical office that changes location frequently.
    d. where ambulances go for auto-mechanic problems.

38. An epidemic is:

    a. a disease that affects many people at the same time.
    b. a disease that is prevalent to a particular people, area or group.
    c. a disease that affects the epidermis layer of the skin.
    d. a procedure that uses a hypodermic needle.

39. Due to changing roles and increased numbers of patients, the group that will be affected most in the hospitals is:

    a. phlebotomists.
    b. volunteers.
    c. RNs, LPNs and nursing assistants.
    d. respiratory therapists.

POST TEST - concluded

40. WHO's definition of health is:

    a. the absence of disease.
    b. a state of feeling good about one's self.
    c. a state of complete physical, mental and social well-being.
    d. a state of complete mental and physical well-being.

ANSWERS TO POST TEST

Modules B and C

1. d
2. a
3. c
4. f
5. g
6. a
7. c
8. b
9. d
10. h
11. e
12. d
13. e
14. e
15. b
16. a
17. f
18. d
19. b
20. b
21. a
22. b
23. f
24. d
25. b
26. b
27. know name
28. desired effect
29. possible side effects
30. possible interactions
31. nursing action
32. b
33. a
34. a
35. e
36. f
37. b
38. a
39. c
40. c

Unit 17 covers the common medical and surgical conditions and the clinical practice of nursing care for adults. The principles of adapting basic nursing care and related procedures are practiced.

NURSING CARE OF ADULTS

Module A - Nursing Care for Patients With Diseases of the Musculoskeletal System
Module B - Nursing Care for Patients With Diseases of the Circulatory System
Module C - Nursing Care for Patients With Diseases of the Respiratory System
Module D - Nursing Care for Patients With Diseases of the Gastrointestinal System
Module E - Nursing Care for Patients With Diseases of the Urinary System
Module F - Nursing Care for Patients With Diseases of the Endocrine System
Module G - Nursing Care for Patients With Diseases of the Reproductive System
Module H - Nursing Care for Patients With Diseases of the Nervous System
Module I - Nursing Care for Patients With Diseases of the Eye and the Ear
Module J - Nursing Care for Patients With Cancer
Module K - Nursing Care for Patients With Infectious Diseases
Module L - Nursing Care for Patients With Allergic Conditions
Terminology
Post Tests:
1. Module A
2. Module B
3. Module C
4. Module D

Post Tests (continued)

5. Module E
6. Module F
7. Module G
8. Module H
9. Module I
10. Module J
11. Module K
12. Module L

When you have completed the learning activities and are ready for a test or wish to challenge a test, please see your instructor.

Suggested Resources

The following texts will supplement the learning materials for this unit. If you are unable to locate these materials, your instructor will assist you. Total Patient Care, Foundations and Practice by Dincher and Hood will be used as your main reference text.

1. Brunner, Lillian Sholtis and Doris Smith Suddarth. Textbook of Medical-Surgical Nursing. J.B. Lippincott Company, Philadelphia, PA, 1980.

2. Dincher, J.R. and G.H. Hood. Total Patient Care, Foundations and Practice. C.V. Mosby Co., St. Louis, MO, 1980.

3. Smith, Dorothy W. and Claudia D. Gips. Care of the Adult Patient. J.B. Lippincott Company, Philadelphia, PA, 1975.

4. Shafer, Kathleen Newton, Janet R. Sawyer, Audrey M. McCluskey, Edna Lifgren Beck and Wilma J. Phipps. Medical-Surgical Nursing. C.V. Mosby Company, St. Louis, MO, 1980.

unit 17

NURSING CARE OF ADULTS

Module A - Nursing Care for Patients with Diseases of the Musculoskeletal System

RATIONALE

To give safe, effective nursing care to a patient with diseases of the musculoskeletal system, you must know the physiological and anatomical changes associated with these diseases and the signs and symptoms for each disease.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity 17 when given a clinical assignment of caring for a patient with a disorder of the musculoskeletal system.
2. Identify the anatomical and physiological changes in bones and muscles that result from disease or trauma.
3. Identify given diseases related to the musculoskeletal system and their common signs, symptoms, complications and treatments.
4. Identify the appropriate nursing action used to care for a patient with a disease of the musculoskeletal system.
5. Identify diagnostic tests ordered for different diseases of the musculoskeletal system.
6. Identify types of traction and the nursing care used for each type.
7. Describe the nursing action, patient symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the musculoskeletal system.

LEARNING ACTIVITIES

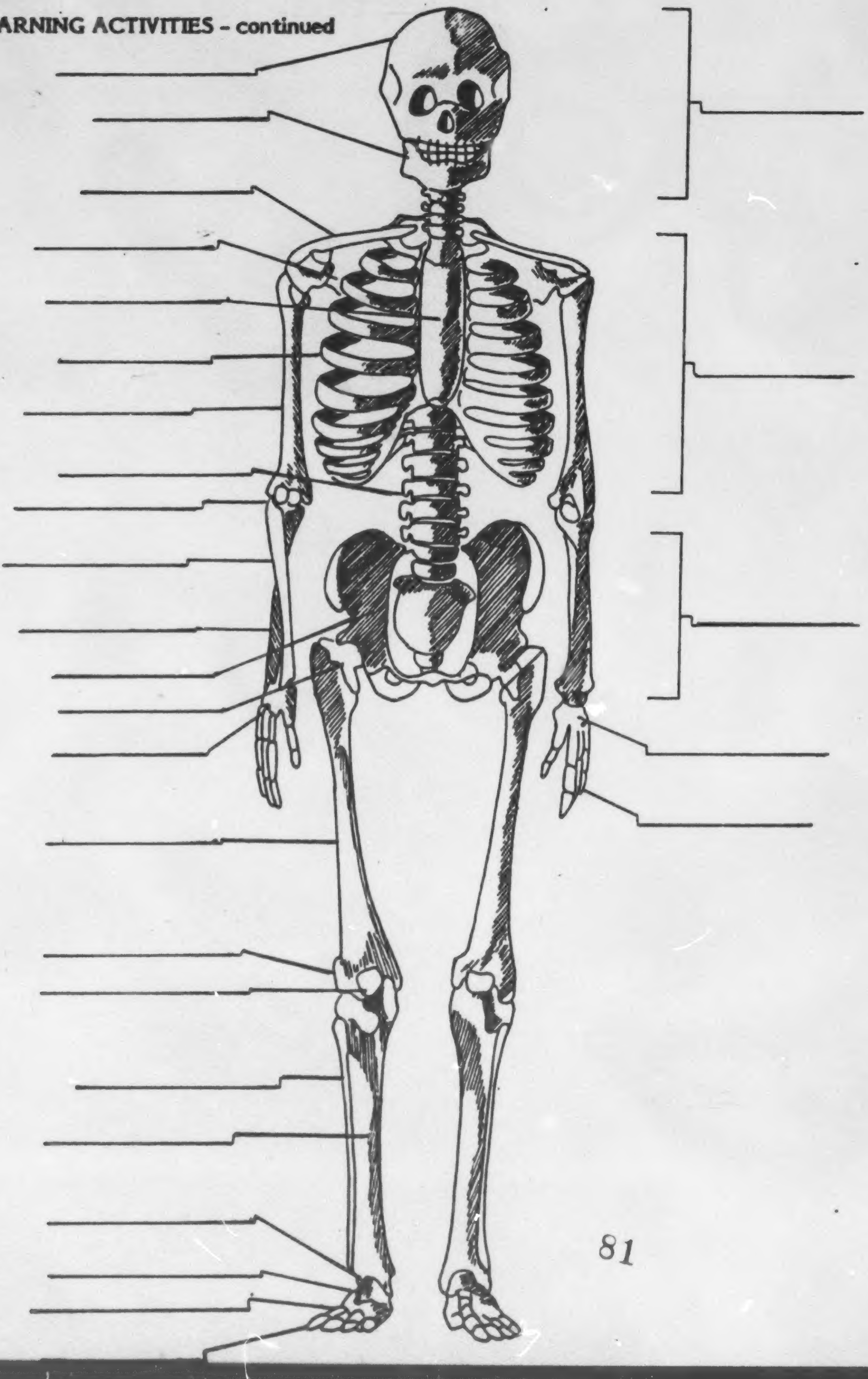
Directions: The information needed to complete Module A is included in this module and in the reading assignments from your textbook, Total Patient Care, C.V. Mosby Company, Saint Louis, MO, 1964. You will also need to review Unit 4, Module B and use Taber's Cyclopedic Medical Dictionary by Clayton L. Thomas, M.D.; F.A. Davis Company, Philadelphia, PA, 1970, to define terms and conditions relating to the musculoskeletal system. Exercises are included to help you learn the material. The answers for these exercises can be found by reviewing the material found in this module and Unit 4. There are many diseases common to the musculoskeletal system; however, the diseases discussed in this module are most commonly treated in the hospital. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to the Musculoskeletal System

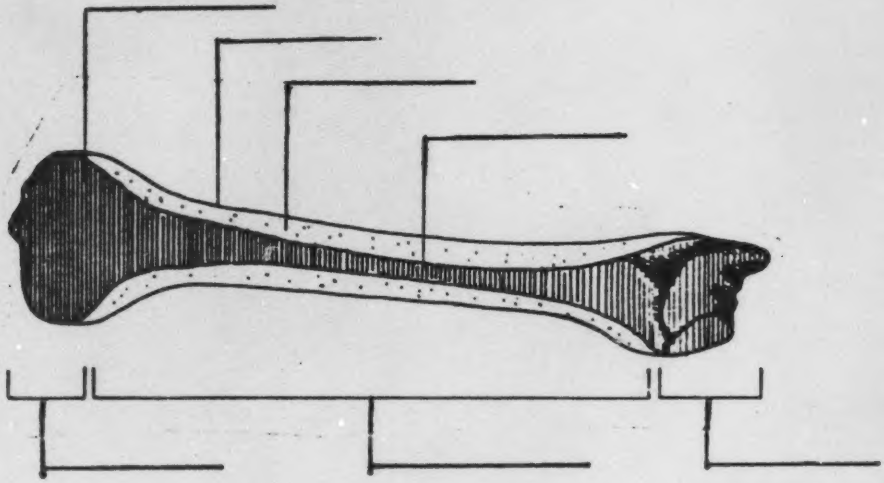
Directions: Read and study Chapters 12 and 23 entitled "Rehabilitation in Nursing" and "Nursing the Patient with Problems of the Musculoskeletal System" in your textbook Total Patient Care and review Module B in Unit 4. After reviewing Module B, complete the diagram on the next page.

LEARNING ACTIVITIES - continued



LEARNING ACTIVITIES - continued

Directions: Label the parts of the long bone.



ACTIVITY #2. Musculoskeletal Terminology Exercise

Directions: Look up the following terms or diseases. You can use a medical dictionary or any other available source. Define these terms in your own words.

1. Abduction: ______________________
2. Adduction: ______________________
3. Alignment: ______________________
4. Ankylosis: ______________________
5. Arthritis: ______________________
6. Arthroplasty: ______________________
7. Arthrotomy: ______________________
8. Articulations: ______________________
9. Atrophy: ______________________
10. Simple Fracture: ______________________
11. Compound Fracture: ______________________

LEARNING ACTIVITIES - continued

12. Contracture: ______________________________

13. Countertraction: ______________________________

14. Degenerative: ______________________________

15. Diaphysis: ______________________________

16. Displaced fracture: ______________________________

17. Dislocation: ______________________________

18. Epiphysis: ______________________________

19. Exacerbations: ______________________________

20. Hemiplegia: ______________________________

21. Kyphosis: ______________________________

22. Lordosis: ______________________________

23. Opposition: ______________________________

24. Paraplegia: ______________________________

25. Periosteum: ______________________________

26. Prosthesis: ______________________________

27. Quadriplegia: ______________________________

28. Remissions: ______________________________

29. Rheumatoid: ______________________________

30. Rickets: ______________________________

31. Siatica: ______________________________

32. Scoliosis: ______________________________

33. Subluxation: ______________________________

LEARNING ACTIVITIES - continued

ACTIVITY #3. Fractures

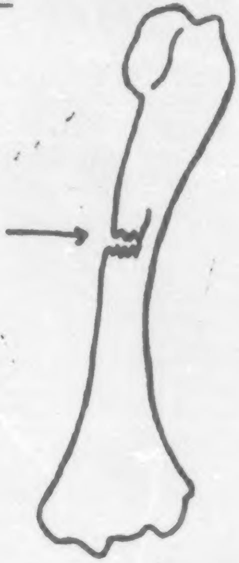
Directions: Read the following.

A bone is fractured when there is a break in its normal structure. Fractures are caused by:

1. An injury, such as a fall or car accident, that creates excessive stress on the bone.
2. A disease, such as cancer or osteoporosis, that weakens the bone to the point that it breaks while the person is performing a simple daily task such as walking. This type of fracture is called pathological.

There are many types of fractures. Four of the most common will be explained here.

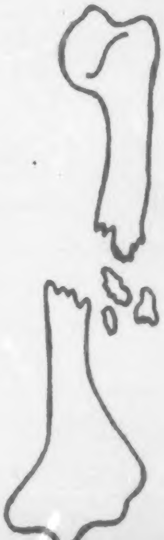
1. Greenstick



1. This type of fracture occurs most frequently in children because their bones are still soft. The bone is splintered on only one side.

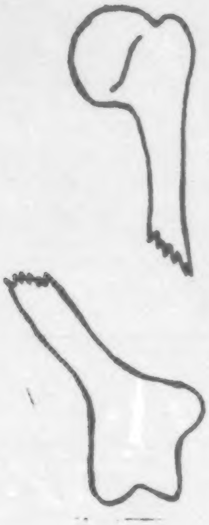
2. This fracture has multiple fracture lines, creating more than two boney fragments.

2. Comminuted



LEARNING ACTIVITIES - continued

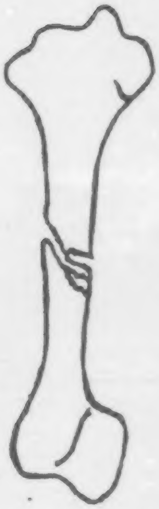
3. Compound



3. With this type of fracture, the skin breaks at the fracture site. The bone may not be protruding or pointing out of the open wound, but it frequently is.

4. The bone is completely broken into two parts, but there is no break in the skin.

4. Simple



When a bone is broken with either a simple or compound fracture, the surrounding tissue is always damaged. The muscles, nerves and blood vessels are all injured in the area of the break. Because these different systems are affected, you can expect to observe many symptoms. However, whether these symptoms are present or not depends on the location and type of fracture.

LEARNING ACTIVITIES - continued

Symptoms

1. Immediate and severe pain
2. Muscle spasms
3. Affected part is immovable
4. Possible gross deformities (as with compound fractures)
5. Ecchymosis (skin discoloration)
6. Edema

A person who is suspected of having a fracture may have multiple injuries in addition to the fracture. Therefore, evaluate the victim for all general systemic conditions such as shock, a life-threatening condition, before treating the fracture.

When treating the fracture(s), your immediate concern will be IMMOBILIZATION of the affected limb. Splinting can be done in many creative ways. After the splinting is finished, the victim is transported to an emergency room where the physician has four main objectives:

1. Confirm the fracture by x-ray
2. Reinstate alignment (reduction)
3. Retain alignment (immobilization)
4. Restore usefulness (rehabilitation)

These four objectives contribute to restoring function of the limb and affect how the limb looks. Cosmesis is a secondary consideration in treating a fracture.

The physician may reduce the fracture by:

1. Closed manipulation. The patient is given an appropriate anesthesia and the physician moves and pulls the two bone fragments until they are in good alignment without any incisions.
2. Open reduction - Surgery is performed and the bone is directly manipulated into place. It may be necessary to hold the bone fragments together with screws and metal plates. This procedure is known as internal fixation.
3. Traction - If severe tissue damage results in muscle spasm near the break or if the patient is a poor surgical risk, reduction will be accomplished by applying traction to the affected part.

LEARNING ACTIVITIES - continued

The healing of bones is a unique reparative process including five processes:

Stage 1: Fracture hematoma
Stage 2: Granulation
Stage 3: Chondroblastic and osteoblastic activity
Stage 4: Ossification
Stage 5: Remodeling

These stages are followed when two bone fragments are in opposition, even if they are not aligned. Therefore, alignment becomes a priority during the healing process.

A complication of fractured bones may be a fat embolism. One source of the emboli is thought to be the fat of the bone marrow. The bones that contain the most marrow are the long bones, pelvis and ribs. Emboli may occur following the fracture of these bones. Globules of fat are released into the bloodstream and act as emboli to block the pulmonary capillaries resulting in hypoxia and tissue death. Symptoms will vary according to where the embolus lodges.

ACTIVITY #4. Casts

Directions: Read the following information.

Plaster of Paris or the recently developed plastic casts are used to immobilize a part of the body after a broken bone has been reduced or to immobilize certain deformities.

After the patient returns to the unit with a cast, elevate the casted limb in correct body alignment using waterproof pillows. Since the cast will be still wet, keep the bed linen off the cast so that circulating air may dry the cast faster. Handle the cast with the palms of your hands so indentations causing pressure sores will not occur.

The most important thing that you can do for a patient with a cast is observe, observes, OBSERVE!! If the patient had an anesthetic, vital signs must be taken frequently and general physical condition (alertness, response, skin color, diaphoresis) must be checked. The patient's extremities must be checked continuously for circulatory impairments (color and temperature).

John fractured his right tibia and has a cast from mid-thigh to mid-foot. You will check his right foot for circulation.

1. Ask him to move the toes of the affected foot.

2. Apply pressure to the right toes by pinching them gently between your thumb and first finger. Observe how fast the color returns to the toenail bed (blanching).

3. Ask if he feels your touching his toes.

4. Ask if he feels numbness or tingling (paresthesis).

5. Compare size, color and temperature of the toes of both feet.

6. Check for sharp edges on the cast.

LEARNING ACTIVITIES - continued

7. Look for drainage. Outline any new drainage with a pen or pencil line. Date and initial the line.

8. Smell for unusual odors under the cast.

9. Listen to the patient if he complains of pain under the cast. Report any complaints of pain to the doctor EARLY!

Now, compare the observations you would make on a leg in a leg cast that has sufficient arterial circulation versus one with circulatory impairment.

Circulatory Impairment	Sufficient Arterial Circulation
1. Swelling (edema)	1. Normal size
2. Cold	2. Warm
3. Pale or cyanotic (blue)	3. Pink or natural color
4. Pain, numbness or tingling	4. Feeling sensation
5. Immovable toes	5. Movable toes
6. Toes do not blanch	6. Color readily returns to toes

Exercising nonaffected limbs/joints is very important. The nurse should encourage the patient to move all joints not immobilized. Correct body alignment must also be carefully watched and provided for, if necessary.

Instructions for a patient in a plaster cast:

1. Keep it clean and dry.
2. Do not use any sharp instrument to scratch under the cast. The patient may complain of some itching under the cast. This is to be expected.
3. Do not put anything under the cast.
4. Report any pain, numbness and/or tingling of fingers or toes.
5. Report any discharge or strange odor under the cast.

ACTIVITY #5. Traction

Directions: Read the following.

Traction is a pulling force used to align fractured bone segments and to prevent muscle contraction in the treatment of some muscular deformities. When traction is applied correctly, the traction must be equal to countertraction. Countertraction is supplied either by the patient's own body weight or by other weights or devices. Traction is accomplished either by pulling on the skin (skin traction) or by pulling on the bone (skeletal traction).

LEARNING ACTIVITIES - continued

With skin traction some material with an adhesive surface is applied directly onto clean, dry skin. With skeletal traction various devices such as pins or wire are placed through a bone.

Patient care for the patient in skeletal traction will include:

1. Active ROM of all unaffected limbs.
2. Check affected part for impaired circulation.
3. Check steinman pin sights for drainage and give pin care as ordered.
4. Check ropes for frays.
5. Check pulleys for free movement.
6. Check to see the correct amount of weight is in use and that the weights are hanging free.
7. Check skin for breakdown q4°.
8. Promote good bladder and bowel function.
9. Provide diversional activities.
10. Provide medication such as mood elevators or tranquilizers as necessary.

Cervical (Neck) Traction: Cervical traction is used to treat neck injuries such as cervical myositis, subluxations, dislocations and minor fractures. Cervical traction may be applied directly or indirectly. Direct traction is applied to the skull bone by means of Crutchfield tongs. Indirect traction is accomplished by using a "head halter" that usually allows the patient to be out of traction a few hours a day. Principles of nursing care are the same for either the Crutchfield tongs or the head halter.

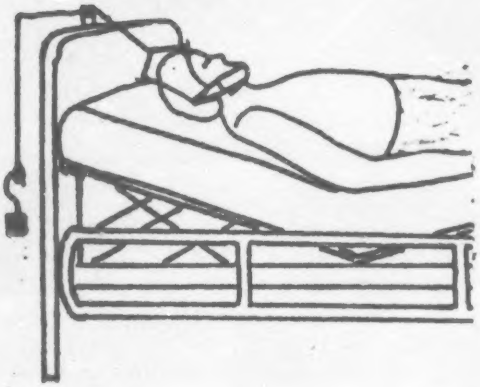
Procedure for Applying and Caring for a Patient in Cervical Traction (see picture)

1. Head of the bed should be raised slightly so that the pull of the traction is in line with the patient's cervical spine.
2. The patient must be flat on his/her back.
3. The position of the head halter should be checked so that:
    a. The halter does press against the ears.
    b. The rope is not resting against the skin.
    c. The chin piece is not pressing on the throat.
4. A rolled towel or contour pillow may be placed under the back of the neck or the shoulders. DO NOT use a pillow under the head.

LEARNING ACTIVITIES - continued

5. All weights must be hanging free.

CERVICAL TRACTION



Nursing Care and Observations for Cervical Traction

1. Place covering over chin pad to protect from food and saliva.
2. Chin care cannot be overemphasized. It may be rubbed with alcohol if the skin is in good condition.
3. Be sure the traction is not rubbing the ears and there are no pressure spots on the back of the head.
4. Check with the physician to establish if the patient can have brief periods of time out of traction.

LEARNING ACTIVITIES - continued

5. Be sure to note how the patient tolerates the change when taken out of traction. Pay special attention to any changes in the patient's level of pain.

6. Dietary changes may be necessary, such as a change to soft foods since chewing is difficult for the patient in cervical traction.

7. Fluid intake is difficult. Water should be offered frequently and a glass of water with a straw should be placed within convenient reach of the patient. Have the glass only partially full so the patient will be less likely to spill it.

8. Since eye contact is difficult for a patient in traction, always talk to the patient from a position that allows the patient to look at you easily.

9. Using prism glasses can make reading and watching TV easier.

Buck's Traction: Buck's traction is a form of skin traction applied to the leg as a temporary treatment for fractures of the shaft or neck of the femur. This traction may also be applied to both legs in the treatment of low-back pain. Other indications for use of Buck's traction is sciatica, myositis and pathology of the knee or hip.

Procedure for Applying and Caring for a Patient in Buck's Traction (see picture)

1. The foot of the bed is flat so that the direction of pull on the femur is straight.

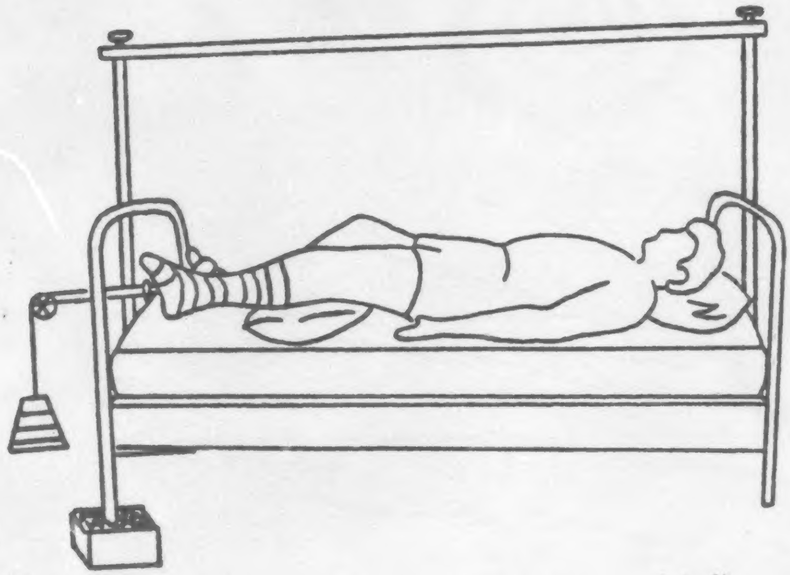
2. The patient must be flat on his/her back; the head of the bed may be raised slightly.

3. The traction is applied to the calf using an ace bandage or the new Velcro boots. Circulation to the toes must be checked frequently. Also, traction should be released and skin care given q4h to q8h unless contraindicated.

4. All weights must be hanging free.

LEARNING ACTIVITIES - continued

BILATERAL/UNILATERL BUCK'S TRACTION



Nursing Care and Observations for Buck's Traction

1. Foot drop (peroneal paralysis) must be prevented. Measures taken to prevent this are using a bed cradle, supporting the feet at right angles and not tucking in the covers at the feet.

2. Damage to the peroneal nerve that lies close to the skin surface in the outside area of the calf can also cause foot drop. Prevent unnecessary pressure from being applied to this area by using bandages, sandbags or blankets and pillows. At least every four hours or more often check the foot for feeling and movement and to see if it is turning in.

3. Use blankets under the calves to keep the heels off the bed. Check the heel at least every four hours. Pressure in this area will cause a sore on the heel. Heel protection can be used but it requires removal every four hours for skin care.

4. Be sure ace bandages are not wrapped too tightly across the top of the foot. This too can cause complications.

5. Observe the Achilles tendon (heel cord) frequently. Since it is superficial, it can be an area to break down.

LEARNING ACTIVITIES - continued

6. Changing the bed of a patient in traction is not easy. How much the patient will be able to assist depends on his ability to mobilize himself with the use of the trapeze. Changing the bed from head to foot may be the easiest method. You will need assistance. Someone must hold the patient's leg while you pull the linen to the foot of the bed. If the patient has a femoral fracture, the leg is totally immoble and the mattress will have to be compressed downwards before the linen can be pulled carefully to the foot of the bed.

7. Wrinkle-free linen helps to prevent pressure areas.

Pelvic Traction: Pelvic traction may be ordered to relieve pain or relieve muscle spasm in the lower back, frequently in the lumbar region. It may also be used for trial treatment of nerve root disorders, sciatica and minor fractures of the lower spine. The doctor will order the patient in traction for a given amount of hours per day. For example the doctor may order traction three out of every four hours around the clock.

Procedure for Applying and Caring for a Patient in Pelvic Traction (see picture)

1. The pelvic belt is fitted according to the patient's hip size. The belt must be positioned so that the pull of the traction is even on both sides.

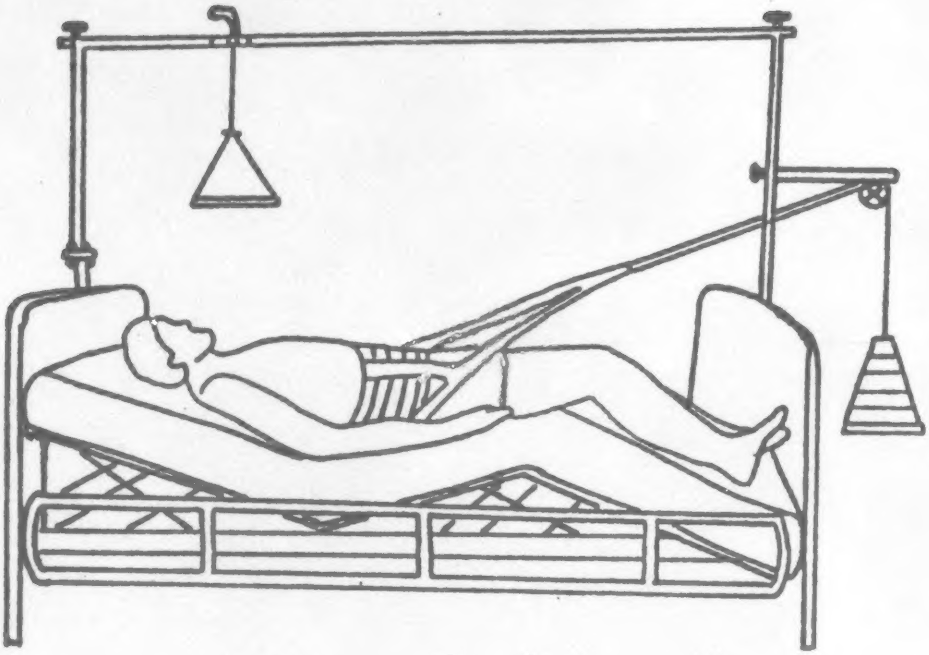
2. The foot of the bed is raised to the highest notch and the knee gatch is elevated to level the foot so that the pull of traction is straight on the hips.

3. The patient must be flat on his/her back but the head of the bed may be elevated to comfortable level.

4. All weights must be hanging free.

LEARNING ACTIVITIES - continued

PELVIC TRACTION



Nursing Care and Observations for Pelvic Traction

1. Do not tuck in bed coverings. Use a bed cradle to support the soles of the feet and prevent foot drop (peroneal paralysis).

2. Since covering a patient in pelvic traction is difficult, use towels, socks or whatever the patient wants as long as the traction is not affected.

3. Toileting is difficult for the patient in pelvic traction. A fracture pan can be used but make sure the pelvic belt is out of the way before the pan is used.

4. Note and record how the patient tolerates being out of traction.

5. The iliac crest is an area of irritation for the patient in pelvic traction. Check this area frequently and give good skin care.

6. The patient in traction may require stool softeners to prevent constipation. This maintains patient comfort and eliminates possible back pressure caused by constipation.

LEARNING ACTIVITIES - continued

7. Pelvic traction during the first 24 hours may cause muscular aches and add to the patient's already uncomfortable condition. Be supportive and comforting to the patient.

ACTIVITY #6. The Patient on a Frame

The Stryker frame, Foster frame and circo-electric bed are all similar in that they provide for changing the patient's position while keeping the spine immobilized. They are used when the patient has a fracture or injury to the spinal column.

With each of these frames, the patient is turned from back to abdomen by turning the whole frame on which he/she lies. Turning the patient involves two frames, one over and one under the patient. The frame on top is screwed in place and straps are secured around both the frames and the patient. The frame is quickly turned so that the patient is in the prone position. The frame is locked into place, the straps removed and the posterior frame and bedding are removed. The posterior part of the body may then be washed and the back massaged and observed for any pressure areas.

ACTIVITY #7. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. The ends of long bones are called ______________________________.

2. The finger and toe bones are named ______________________________.

3. A fracture involving a broken bone and a break in the skin at the same spot is called a ________________________ fracture.

4. The physician's three main objectives in caring for a broken bone are:

   a. ____

   b. ____

   c. ____

5. Traction is the preferred method of reducing a fracture if the patient is young and doesn't have other health problems. TRUE FALSE

6. If you apply pressure to a fingernail and it does not blanch or turn white you can assume the circulation to the finger is adequate. TRUE FALSE

7. If the patient has a right arm cast on and feels tingling in his/her right finger, the patient probably has good circulation to that extremity.
TRUE FALSE

8. When the patient returns to the floor, his/herthe extremity with the new cast should be elevated on pillows. TRUE FALSE

LEARNING ACTIVITIES - continued

9. List six signs of sufficient arterial circulation to an extremity.

a. ______________________ d. ______________________

b. ______________________ e. ______________________

c. ______________________ f. ______________________

10. A rule of thumb that should be remembered with all traction patients is to make sure that the weights are hanging free. TRUE FALSE

11. The type of traction usually applied to the calf of a leg with a broken femur is called ______________ traction.

12. People with low-back pain are usually placed in ______________ traction.

13. If a patient has a spinal cord injury, the patient should be placed on a ______________ because it will keep the spine ______________ ________.

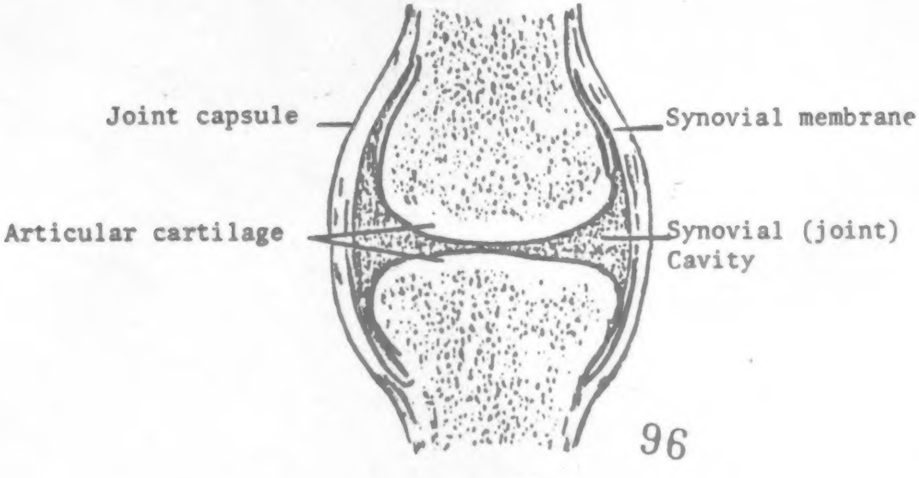
14. A patient in cervical traction should not have his/her head elevated on pillows. TRUE FALSE

ACTIVITY #8. Rheumatoid Arthritis

Directions: Read the following information and study the diagram of a knee joint. This material should help you understand the physical changes caused by rheumatoid arthritis.

Rheumatoid is a general term identifying pain and stiffness to muscles or to bones.

Arthritis is a term pertaining to articulations or joints, more specifically, the inflammation of articulations or joints.



Knee Joint

LEARNING ACTIVITIES - continued

The actual cause of rheumatoid arthritis is unknown, but the physical changes are very apparent.

1. Rheumatoid arthritis usually begins with an inflammation of the synovial membrane that produces synovial fluids. This fluid makes it possible for the articulating bones to move smoothly over one another. This inflammation causes swelling of the joint.

2. Ligaments (attaching bone to bone) and tendons (attaching muscles to bone) may become weakened and stretched and eventually scar.

3. Scarring of the ligaments causes the joint to be fixed (ankylosis).

4. The swelling can cause spasms of the closest muscles.

5. The muscle spasms can cause stiffness of the joint.

6. If the joint is not moved over a period of time, the muscles and the tendons will atrophy. Therefore, the joints in severe cases of rheumatoid arthritis become swollen, stiff and deformed.

7. Eventually, due to the inflammation and stiffness, the bone and the cartilage is destroyed and replaced by sponge tissue.

Remembering what you have just read, read the following signs and symptoms of rheumatoid arthritis. You should be able to predict what most of them are. Can you?

Signs and Symptoms

1. Inflammation anywhere in the body causing swelling, tenderness of a joint and pain (dysarthria).

2. The pain keeps the patient from moving and from exercising the joint as much as the patient should. Therefore, the patient's ability to move becomes limited.

3. The muscle spasms and the atrophy, the ligament and the tendon scarring and the large bone destruction further limit the ability of the joint to move and it becomes fixed.

Pain and stiffness, especially after rest, are the general symptoms of rheumatoid arthritis. They lead to fatigue and weakness. The patient is not able to perform daily tasks as readily as he/she previously could.

Example: If the patient's fingers are affected, brushing teeth and eating become painful tasks that may take twice as long as usual.

Example: If the patient's knees are affected, the patient may have difficulty walking across the room to answer the telephone or to go to the bathroom. It also may be very difficult to get up from a chair.

LEARNING ACTIVITIES - continued

Since rheumatoid arthritis can affect any joint, the care for each patient is very individualized.

Physician's orders may include:

1. Exercises and/or rest of the affected joints.
2. Firm mattress for good body alignment.
3. Splints to prevent deformities caused by muscle spasms.
4. Corrective shoes to specially fit the arthritic, deformed foot and to provide more support.
5. Heat application to affected joint (example: paraffin, heat light, hot baths, heating pad) to decrease muscle spasms.
6. Medicine to relieve pain, especially before exercising.
    a. ASA
    b. Indocin
    c. Butazolidin
    d. Motrin
    e. Nolfan

Directions: Now, read the general nursing care plan for a patient with rheumatoid arthritis. Feel free to any nursing approach and rationale that is not included.

Patient Problem	Nursing Approach	Rationale
Pain in affected joint.	Apply heat (warm towels) to joint before exercising.	Heat increases circulation to the area to decrease swelling and relieve muscle spasms.
	Give patient plenty of time to do daily tasks, especially in the morning.	There will always be more stiffness and pain after a period of rest or especially after a night's sleep. Making the patient move faster or "hurry up" creates unnecessary pain.
	Have available an elevated toilet seat and elevated armchair.	If the knees are affected, the patient has difficulty getting in and out of a chair. An elevated seat decreases the distance the joint has to move and the armrests allow the arms to help lift the body weight.
	Bed cradle and footboard.	Heavy linen puts pressure on affected joints causing pain and discomfort.
Deformities of affected joint.	Provide periods of rest.	Patient is fatigued easily and takes longer to perform tasks. Patient needs much rest.
	Provide periods of exercise as ordered.	If the joints are not exercised, permanent contractures will develop. The team of physician, patient and staff should all be involved in the decision about exercise.

Patient Problem	Nursing Approach	Rationale
Deformities of affected joint (cont.)	Range of motion is frequently ordered with special consideration to patient's limitation.	If the joints are not exercised, permanent contractures will develop. The team of physician, patient and hospital staff should all be involved in this decision.
	Observe the patient exercising.	Nurse must follow patient's progress, make sure he does exercises but does not overdo them.
	Properly align limbs. No pillow under knees, head.	Avoid flexion positions.
Inadequate diet causing nutritional deficiencies	Provide a balanced diet containing the basic four nutrients with special attention to adequate intake of roughage (fruits and vegetables), protein and vitamins.	Special diets will not help the arthritic patient and he should be warned against "fad" diets. If the patient is overweight, a weight reduction diet may be ordered by the physician until the desired weight is reached.
	Allow patient plenty of time to eat.	Again, do not rush the patient! He will become discouraged and eat less.
	See that special utensils are available at mealtime.	Spoons and forks with extra long handles or utensils with extra wide handles facilitate the patient's holding them.

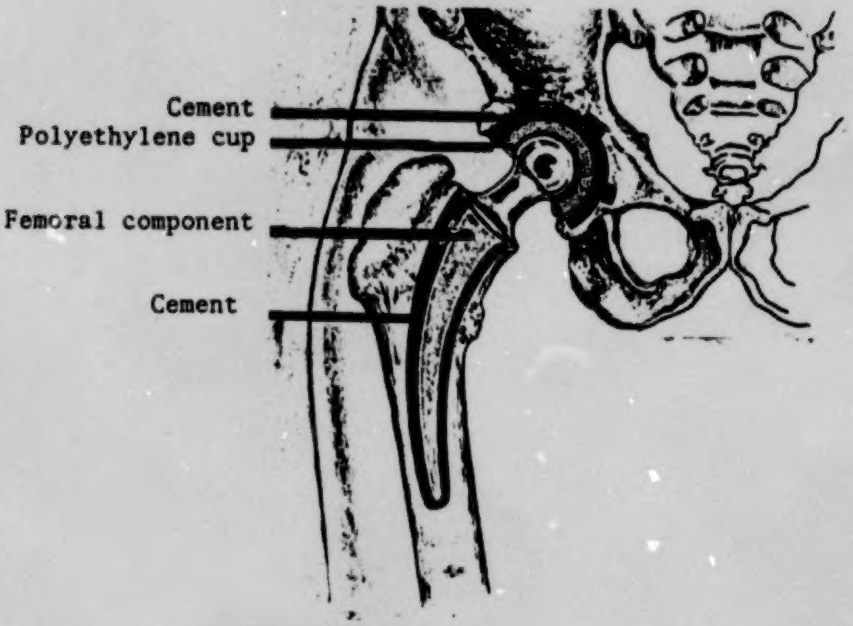
There is no known cure for rheumatoid arthritis. There are remissions and exacerbations (increase in the severity of signs and symptoms). The nurse's responsibility is to prevent contractures when possible by relieving pain and providing periods of exercise (in that order!!). Working with the physical therapist and occupational therapist, the nurse should explain to the patient the need for periods of exercise and rest and to see to it that the exercises are done. Keeping the care plan on the Kardex up-to-date and specific is essential.

LEARNING ACTIVITIES - continued

ACTIVITY #9. Total Hip Replacement

Directions: Read the following.

In total hip replacement, the head of the femur is removed and replaced with a metal or plastic head and the socket joint in the pelvic bone is replaced with a metal or plastic cup. Each prosthesis is attached to an anchor or pin that is driven into the adjacent bone.



The usual reasons for performing this operation are to relieve severe pain and dysfunction such as that caused by rheumatoid arthritis, to correct congenital dislocations or deformities and to correct previous hip-repair surgeries that have failed.

In order to replace the hip joint, the surgeon must cut through muscle, skin and many blood vessels. Therefore, nursing action must include care to decrease muscle spasm, to check for bleeding, to observe for skin breakdown and to decrease the possibility of emboli or contractures forming.

Directions: Read the nursing care plan for a patient on the first and second days postop, following total hip replacement. Feel free to write in any suggested nursing approach that would help relieve a patient problem. These are only three of many possible problems that could result in this situation.

Patient Problem	Nursing Approach	Rationale
Prevent postop dislocation of affected hip	Turn only to unaffected hip with at least three pillows between the legs to keep them in good alignment and prevent adduction. Keep head of bed at 30° (or less) elevation. Prevent hip flexion beyond 90°.	Affected leg must always be abducted and externally rotated to keep the ball in the socket. Flexion of hips may cause dislocation.
Inability to move easily and freely due to Buck's traction on affected hip (Buck's traction may be applied to prevent dislocation of the affected hip)	Release q4h or as ordered for skin care. Place water and personal articles within easy reach.	Buck's traction is released to check condition of skin and to give skin care. Making things (utensils, water) in easy reach aids patient comfort and decreases irritability.
Prevent skin breakdown.	Keep heels off the bed with rolled towel. Frequent back care.	Pressure on heels could cause decubitus. Increase circulation to pressure areas.

The physician will also have inserted a drainage tube leading from the hip to either an Emerson pump or a Hemovac to drain any blood or fluid so that an abcess or hematoma does not form. It is the responsiblity of the nurse to see that either one is functioning well and to keep a record of the drainage and record any blood loss.

The Buck's traction will be removed in 24 to 48 hours and so will the Hemovac or Emerson pump. By the fourth or fifth day, the patient will begin standing and walking and going to physical therapy for abduction, extension and flexion exercises. Some of these will be performed in physical therapy but the staff must be informed and have knowledge of patient's required exercises so they can assure followup care in the nursing area with continuation of the prescribed program.

LEARNING ACTIVITIES - continued

ACTIVITY #10. Amputation

__Directions:__ Read the following.

The amputation or removal of an extremity causes a tremendous emotional shock to the individual, even though it may have followed a longterm illness in which the patient fully realized that the limb had to be removed for safety and for health.

There are many reasons for performing an amputation. The most common are:

1. For relief of a deformity.
2. After an injury.
3. In response to life-threatening conditions such as:
    - a. Serious infection.
    - b. Diabetes.
    - c. Cancer.
    - d. Damaged blood vessels.

Preop care should include:

1. Establishing how patient feels about losing a limb.
2. Being available for talking or listening.
3. Including the family.
4. Contacting resource people.
    - a. Clergy
    - b. Another adjusted amputee
5. Performing routine nursing observations of a postop patient, such as:
    - a. Vital signs.
    - b. Skin color and temperature.
    - c. Level of consciousness.
    - d. Condition of dressing.
    - e. Pulmonary complications.
    - f. Cardiovascular collapse.

Directions: Read the nursing care plan for a patient with an amputation. Feel free to write in any suggested approach that would help relieve a patient problem.

Patient Problem	Nursing Approach	Rationale
Oozing of wound	Reinforce - DO NOT CHANGE	Normal postop drainage.
Flexion deformity	After 24° keep flat on bed with spine position prone and small pillows placed under lower trunk.	Limb is lighter than other leg.
Weak arms will not support future crutch walking.	Teach pushups when in prone position.	Hospitalization results in inactivity.
Prevent flexion contraction of hip or nearest joint.	To facilitate fitting a prosthesis, teach patient to carry amputated limb in normal position in all activities.	Contractures develop because the limb is lighter.
Promote cleanliness of suture line and stump.	1. Wash stump thoroughly twice a day. 2. Massage with lanolin to stimulate circulation. 3. Apply clean properly fitting sock that is changed daily.	
Phantom pain	1. Reposition limb. 2. Take time to talk. 3. Medicate if the pain is real.	Nerves severed during surgery.

LEARNING ACTIVITIES - continued

ACTIVITY #11. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. Total hip replacement is performed when the head of the femur has been completely broken off. TRUE FALSE
2. When turning a patient with a total hip replacement, place three pillows between the legs because ____
____
3. If the right arm were abducted and externally rotated, the palm of the hand would be facing ____
4. Buck's traction should not be released at any time. TRUE FALSE
5. Nursing care of a stump once the dressing has been removed is to ____________
____
6. The stump should never be massaged because it may loosen an embolus and cause severe damage. TRUE FALSE
7. Rheumatoid arthritis means ____
____
8. If a patient has rheumatoid arthritis, bone and cartilage may be destroyed because ____
____
9. The affected joint is stiff because ____
____
10. When does the patient have the most pain and stiffness? ____________________
____
11. To decrease joint deformities, you should make sure that the patient is always active and exercising. TRUE FALSE
12. You want to keep the linen off the affected joints because ____________________
____

LEARNING ACTIVITIES - continued

13. Heat is applied to the affected joints because it ______________________

____

14. The patient can never exercise too much. TRUE FALSE

15. The patient should have an elevated toilet seat if hips or knees are affected because ______________________

____

16. List four nursing actions you can do before surgery to prepare a patient for an amputation.

    a. ______________________

    b. ______________________

    c. ______________________

    d. ______________________

17. What will you do to clean a stump?

    a. ______________________

    b. ______________________

    c. ______________________

18. How will you prevent flexion contractures?

____

____

____

____

19. You will change the dressing on the stump as soon as it is saturated.
TRUE FALSE

20. Flexion contractures of the thigh can be prevented by positioning the patient on his/her abdomen. TRUE FALSE

21. Phantom pain is always imagined. TRUE FALSE

LEARNING ACTIVITIES - continued

ACTIVITY #12. Other Diseases of the Joints and Bones

Directions: Read the following information.

Osteoarthritis

Osteoarthritis is a disease that generally affects people over forty years of age. It is a degenerative disease in which an organ does not function well because of changes in its structure (anatomy).

In the disease osteoarthritis (osteo - bone; arthro - joint) the cartilage at the end of the adjoining bones becomes thinner and calcium is deposited in its place. Instead of a smoothly moving joint, there are jagged calcium deposits rubbing on jagged calcium deposits. These deposits may break away from the bone and float in the synovial fluid. Frequently, they are surgically removed (arthrotom). Since these calcium deposits are rubbing against each other, there is some pain, but no swelling or inflammation. Limitation of movement or crippling is very uncommon.

The joints that are affected the most are weight-bearing joints such as the knees, hips and spine. Poor posture and obesity are the most common predisposing factors.

Nursing care consists of encouraging the patient to alternate short periods of rest with short periods of activity. Resting is one of the few ways to relieve the pain. Ace bandages around affected joints may help to support them.

Preventive nursing is very important with osteoarthritis. Proper nutrition, weight control, correct posture and good body mechanics should be taught to all children.

Gout

Gout is classififed as an arthritic disease because it affects the joints. Actually, gout is a metabolic disorder causing an increase in uric acid in the blood. This increase causes urate crystals to be deposited in the joints. The joint most affected is the large joint of the great toes, but any foot or heel joint or knee and elbow joint may also be affected. Men are more likely to have gout than women by 19 to 1.

Because of the crystal deposits, the joint becomes swollen, red and very painful. Attacks have a sudden onset without warning, and last from 3 to 10 days if left untreated. Most patients respond quickly to the drug colchicine or any other medication that reduces the amount of uric acid in the body. Benemid and Zyloprim are also used.

A person may only experience a few attacks of gout in a lifetime or may have chronic attacks causing crippling deformities in the affected joints. If the disease is not kept under control, kidney stones and renal failure may develop.

Some nursing approaches can help the patient. Study the care plan on gout on the next page.

Patient Problem	Nursing Approach	Rationale
Pain and swelling of great toe.	Elevate foot of bed or elevate foot on pillows.	Decrease swelling and throbbing of toe.
	Ice packs to affected toe, if it can be tolerated.	Decrease pain.
Dietary restrictions	Weight reduction diet if ordered.	Obesity aggravates the affected joint.
	Maintain restrictions as ordered, such as reduction in purines (example: decrease brains, kidneys, sardines, meat gravies).	Purine molecules join together and uric acid is formed. We want to lower uric acid by lowering purines.
Possible kidney stones.	Suggest eating more fruits and vegetables than meat.	Will lower the acidity of the urine and decrease chance of stone formation.
	Force fluids. I & O	Daily urine output should be 2,000 - 3,000 cc per day to prevent urine stagnation and crystalline formations.

LEARNING ACTIVITIES - continued

Bursitis

A bursa is a sac lined with a synovial membrane and containing synovial fluid. It is located wherever there is friction between two bones, between tendons and bones or between ligaments and bones. The purpose of the bursa is to decrease friction and to protect bony projections.

Bursitis, inflammation of the bursa, may develop slowly from repeated trauma or strain, or it may develop rapidly following severe damage such as the damage resulting from a car accident. Bacteria may also cause bursitis. Like any other inflammation, there is pain, swelling and tenderness. Active motion with the affected joint is more painful than passive movement. The shoulder joint is the most frequently affected. Bursitis may become so severe at the shoulder joint that degeneration of the tendons start and calcium deposits are left in their place. This is extremely painful!!

Helping to relieve the pain is the nurse's biggest concern. The nurse can help to relieve the immediate pain by temporarily immobilizing the joint with a sling or by keeping the patient on bedrest. Heat applied to the affected joint in any manner will always help to relieve the pain and the inflammation. After a certain length of time, the patient must again begin to exercise the joint so that contractures do not set in.

Physician's treatment may include:

1. Medication such as ASA, Indocin, Motrin to relieve pain.
2. Hydrocortisone injected into the bursa to decrease inflammation.
3. Aspiration of irritating contents of the bursa and surgery to remove calcium deposits.
4. X-ray therapy to dissolve calcium deposits.

Osteomyelitis

Osteomyelitis is literally an inflammation of the bone marrow. Actually, it is an infection that can be caused by two different routes.

1. The bacteria from a systemic infection such as staph and/or strep may be carried in the bloodstream to that part of the bone that has the most blood supply, the epiphysis of long bones.
2. A compound fracture or a penetrating wound can cause a local infection only affecting the part of the bone that was traumatized.

No matter how the bacteria invades the bone tissue, the result is the same bone destruction. The bacteria grow and multiply putting pressure on the periosteum and, therefore, cutting off the blood supply to the bone. The bone dies. Sometimes the dead tissue drains out of the bone as an abscess and new bone tissue replaces it, but frequently the necrotic tissue must be surgically removed.

LEARNING ACTIVITIES - continued

The most noticeable sign of osteomyelitis is sudden and severe pain over the affected area. Other more common symptoms of an infection are chills with a rapid increase in temperature and possibly nausea and headache. The pain is usually located at a joint since that is where the epiphysis is located, but there is no pain upon movement of that joint. This is one way of distinguishing between joint disease and osteomyelitis. Blood cultures are usually taken and usually positively identify the invading organisms. Also, the WBC (leukocytes) will be very elevated due to the infection. Since x-rays show no bone change for two to three weeks, they are a poor evaluating tool when osteomyelitis is suspected.

If the osteomyelitis is a chronic condition, there may be a draining abscess over the affected bone. There will also be periods of remission (no symptoms) and periods of exacerbation (severe symptoms).

The two methods of treatment used by the doctor are antibiotic therapy and the surgical removal of the dead bone tissue by a sequestrectomy. Frequently after surgery there will be a cast on the affected extremity to immobilize the affected joint as well as the joints above and below it.

Study the patient care plan below. Use your textbook or the information in this module to fill in the rationale section of this care plan. Discuss what you have written with your instructor either individually or in a group.

Patient Problem	Nursing Approach	Rationale
Pain	When turning patient, always give support to the joint above and below the affected area. Always have two or more people helping with the turning (so the affected joint gets the support it needs). Avoid any sudden jolts to the body, even bumping the bed.	
Slow tissue healing.	Encourage protein and vitamin C (for healing) at every meal. Large fluid intake.	
Draining infected wound.	Isolation technique carried out with great care utilizing wound and skin precautions (gown and gloves). Sterile dressing changes always.	

LEARNING ACTIVITIES - continued

Tuberculosis of the Bones

The TB bacteria forms a lesion in the lung. The bacteria is carried through the bloodstream and settles in the ends of long bones or in the periosteum of long bones. There is destruction in the bone which is replaced by a thicker wall of bone tissue. Again, since the epiphysis is involved, there usually is joint involvement. This is not contagious unless there is a draining wound. Tuberculosis of the spine (Pott disease) is the most common form.

The diagnostic tool that definitely determines TB of the bone is a biopsy of the bone tissue. TB skin tests are also done, but the biopsy is more accurate.

Early signs of this disease are weight loss, fatigue, anorexia and disinterest in usual tasks. Specific symptoms to the involved area are occasional pain, tenderness, and muscle spasms.

There are three general areas of nursing care: providing for good nutrition, care of the affected joint with a cast or a brace, and periods of rest. Not only must the nurse know and understand the reason for these three areas of care, but teaching the family about them is one of the most important things the nurse can do. The patient will be in this condition for six to twelve months and it will be the responsibility of the family to see to it that the patient receives a well-balanced, high protein diet, and that good skin care is given around the cast or the brace. The physician will also order antituberculous drugs which must be taken for up to two years or longer and the family must understand that the patient must take these medicines.

After the excellent care that you provide for the patient in the hospital, and the instructions and support you give the family and patient before discharge, an important duty left to do is to contact the social service at the hospital, or the visiting or public health nurse so that follow-up care can be provided.

ACTIVITY #13. Traumatic Injuries

Directions: Read the following information.

Contusions

A contusion is a closed wound (skin is not broken) usually caused by a blunt instrument. A breakage of blood vessels in the soft tissues causes a hematoma (blood tumor). The hematoma causes discoloration of the area ("black and blue" spots), swelling and, of course, PAIN. To decrease all three of these signs, bleeding, swelling and pain, immediately apply ice for several hours. It may also help to elevate the injured part. After several hours if there is no further bleeding, heat may be applied to relieve muscle soreness.

Sprains and Strains

The function of a ligament is to hold bone to bone and to protect the joint. (Tendons hold muscles to bones). If a joint is forcibly overextended, the ligaments or tendons will tear or give way from the bone. There may be ruptured blood vessels and therefore, a hematoma and swelling.

LEARNING ACTIVITIES - continued

The ligament will repair itself with scar tissue eventually, but immediate care must be taken to decrease swelling and to relieve that old devil - PAIN!

To reduce swelling:

1. Elevate extremity for two to three days.

2. Apply ice packs for two hours, intermittently for 24 hours.

To reduce pain:

1. Patient should not use the affected joint.

2. Give analgesics.

To protect the ligament, give it support so that it can heal by:

1. Wrapping with ace bandage.

2. Taping joint with adhesive tape.

Whiplash

Whiplash is trauma caused to the muscles, tendons and ligaments by hyperextension of the neck. Any quick, severe jolt that causes the head to extend farther back than it normally can will cause a whiplash. This is usually the result of a rear-end auto collision.

It may take four to five days for the symptoms to appear. Because the muscles have been stretched, the person may experience a headache, muscle spasms and a drawing sensation in the back of the neck.

The treatment of choice is a cervical collar and the sooner the person is diagnosed and begins wearing it, the better. If the whiplash is severe, cervical traction, heat therapy and physical therapy will be ordered. All of these treatments help to relieve the pain and the muscle spasms and to give sufficient rest to the affected tissues so that they may heal properly.

ACTIVITY #14. Neuromuscular Conditions

Directions: Read the following material.

Muscular Dystrophy

There are three different types of muscular dystrophy. One affects young children between two and three years of age. The other two affect teenagers to 30 year olds. They can affect them only slightly or can be severely disabling within a few years. The most common type occurs in men who have inherited the genetic defect from their mothers.

LEARNING ACTIVITIES - continued

No matter what type of muscular dystrophy the patient has, the physiological changes are the same, muscle weakness and atrophy. There is no known cause for this change, but research has proven that heredity factors play a major role in who contracts the disease. Carriers can now be identified before they ever have symptoms by their increased blood levels of CPK (creatine phosphokinase).

Since we know the symptom, muscle deterioration, but not the cause, there is no "cure" for MD. Since the disease course is usually slow and steady, the nurse must conscientiously strive to keep deformities and contractures to a minimum. Study the nursing care plan below.

Patient Problem	Nursing Approach	Rationale
Contractures	Footboards.	Prevent footdrop.
	Proper bed positioning.	Prevent knee and hip contractures.
	Exercise. ROM - Active Passive	Prevent muscles from wasting away. Once a muscle has deteriorated, it will never return to normal.
Obesity (because patient is less active).	Guard against overeating.	Prevent buildup of fat.
	Well-balanced diet.	Don't we all need this?

Emotional support to patient and family is a must. This is a long and lingering disease with no remissions. All involved must understand this, be able to express their feelings about it and learn to cope with it as well as they can. The Muscular Dystrophy Association of America donates emotional, physical and economical support to those who need it. You might make your patients aware of this organization.

ACTIVITY #15. Examination of the Extremities and the Musculoskeletal System

Directions: Read the following.

Examination of the extremities can be highly valuable, not only for the information that may be obtained with respect to musculoskeletal function, but also because of findings that may reflect systemic disease. Only general principles will be covered.

LEARNING ACTIVITIES - continued

The upper and lower extremities are noted for their symmetry. Note if there is localized or generalized atrophy. Examination of the fingers, toes and finger and toenails may be useful. The vessels of the upper and lower extremities are examined. Vascular disease of the lower extremities is exceedingly common. The most common abnormality of the legs is edema produced by heart or renal failure.

Joints may be evaluated for their range of motion and for the strength of the muscles that flex and extend the joints. The nurse should become familiar with the normal range of motion of major joints and should be able to assess functional loss.

The normal curvature of the spine is convex through the thoracic portion and concave through the cervical and lumbar portions.

Examine your own musculoskeletal system and write what you see and feel in the spaces provided below.

Upper extremities:

Right ________________________________
pulses ________________________________
fingernails ______________________________

Left ________________________________
pulses ________________________________
fingernails ______________________________

Lower extremities:

Right ________________________________
pulses ________________________________
toenails ______________________________

Left ________________________________
pulses ________________________________
toenails ______________________________

Joints:

Neck ________________________________

Shoulder ________________ Hip ________________

Elbow ________________ Knee ________________

Wrist ________________ Ankle ________________

Fingers ________________ Toes ________________

Spine ________________________________

LEARNING ACTIVITIES - continued

ACTIVITY #16. Review Exercise

Directions: Take a moment out to review by answering the following questions. Fill in the blanks or circle "true" or "false."

1. Factors that may lead to osteoarthritis are ____________________ and ____________________.

2. In osteoarthritis, ____________ ________________ is deposited in the joints.

3. A blood test ordered when gout is suspected in a patient is to check the ___________________________ level.

4. A person is most likely to feel pain in the ____________________ ____________________ with gout.

5. There are no dietary restrictions with gout. TRUE FALSE

6. Gout must be treated to prevent __________________ ____________________ from forming.

7. Two ways in which to decrease the pain in the joint affected with gout are:

   a. ____

   b. ____

8. A patient with bursitis must keep moving the joint as much as possible to decrease the chance of deformities. TRUE FALSE

9. Define bursitis. ____

   ____

10. Osteomyelitis is an inflammation of the bone. TRUE FALSE

11. A sign of osteomyelitis is ____

12. With osteomyelitis, the WBC will be ________________________________ because ____________________.

13. When turning a patient with an affected joint (with any disease) always support the joint above and below the affected joint. TRUE FALSE

14. Why is the epiphysis most affected in osteomyelitis and TB of the bones?

    ____

    ____

LEARNING ACTIVITIES - concluded

15. You apply ice packs to a contusion in order to:

    a. ____

    b. ____

16. A sprain should be packed in warm soaks to increase circulation to the torn tissue. TRUE FALSE

17. With MD, the patient experiences severe muscle spasms and twitching. TRUE FALSE

18. Nursing care for a patient with MD is to prevent deformities. TRUE FALSE

19. There are remissions and exacerbations with MD. TRUE FALSE

20. Constipation could be a problem with MD. TRUE FALSE

ACTIVITY #17. Clinical Assignments

Directions: Read the following objectives specific to the care of a patient with a disease of the musculoskeletal system. You are responsible for the patient's care as well as the general clinical objectives, when assigned to such a patient.

Specific Clinical Objectives

To the instructor's satifaction you will:

1. Provide nursing care to alleviate:
    a. Pain
    b. Muscle spasms
    c. Contractures
    d. Fear, anxiety
2. Demonstrate nursing care of patients with therapy specifically related to the musculoskeletal system. Include:
    a. Casts
    b. Traction
    c. Frames
    d. Splints
    e. Crutches
    f. Braces

NURSING CARE OF ADULTS

Module B - Nursing Care for Patients with Diseases of the Circulatory System

RATIONALE

To provide safe, effective nursing care to patients with diseases of the circulatory system, you must know the physiological and anatomical changes occurring with each disease and their signs and symptoms.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity 19 when given a clinical assignment of caring for a patient with a disease of the circulatory system.
2. Identify common laboratory tests, their procedures and complications for diseases of the circulatory system.
3. Identify physiological changes that occur with diseases affecting the circulatory system.
4. Recognize common causes, signs, symptoms and treatments for diseases related to the circulatory system.
5. Identify the appropriate nursing action in given situation questions to care for a patient with a disease of the circulatory system.
6. Label parts of the heart on a diagram.
7. Identify the signs and symptoms of a blood transfusion reaction.
8. Identify the types, signs, symptoms and nursing care for a patient in shock.
9. Demonstrate appropriate examination and assessment for the cardiovascular system.

LEARNING ACTIVITIES

Directions: The information you need to complete Module B is included in this module and in the reading assignments from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the circulatory system and review Unit 4, Module E. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material found in this module and Unit 4, Module E. There are many diseases common to the circulatory system; however, the diseases discussed in this module are most commonly found in hospitalized patients. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to the Circulatory System

Directions: Study chapters 14 and 15 of your textbook Total Patient Care (5th Ed.), entitled "Nursing the Patient with Blood Dyscrasias" and "Nursing the Patient with Problems of the Cardiovascular System." Now, review Module E in Unit 4 on the anatomy and physiology of the circulatory system. After reviewing the material, answer the questions below by filling in the blanks and labeling the diagram.

1. What is the function of the circulatory system? ______________________________

____

2. The systolic blood pressure reading indicates ______________________________

____ .

3. The diastolic blood pressure reading indicates ______________________________

____ .

4. The coronary arteries supply the ____________________ with oxygen.

5. The pulmonary ________________ supplies the lungs with unoxygenated blood and the pulmonary ________________ leaves the lungs with oxygenated blood.

6. What is the function of the lymph nodes? ______________________________

7. Where are the lymph vessels found in the body? ______________________________

8. What is the function of the spleen? ______________________________

9. List the three types of blood cells and the function of each.

	TYPE	FUNCTION
a.	______________________	______________________
b.	______________________	______________________
c.	______________________	______________________

10. What is the difference between serum and plasma? ______________________________

____

11. A normal person has _____ quarts of blood in his/her body.

LEARNING ACTIVITIES - continued

12. List the three types of blood vessels.

    a. ______________________________

    b. ______________________________

    c. ______________________________

13. The sac that holds the heart is called the ______________________________ .

14. The delicate inner lining of the heart is called the ______________________ .

15. Red blood cells are destroyed in the ___________________________________ .

16. Blood is ____% water.

17. The pacemaker of the heart is located in the ___________________________ .

18. What are the functions of the general circulation?

    a. ____

    b. ____

    c. ____

    d. ____

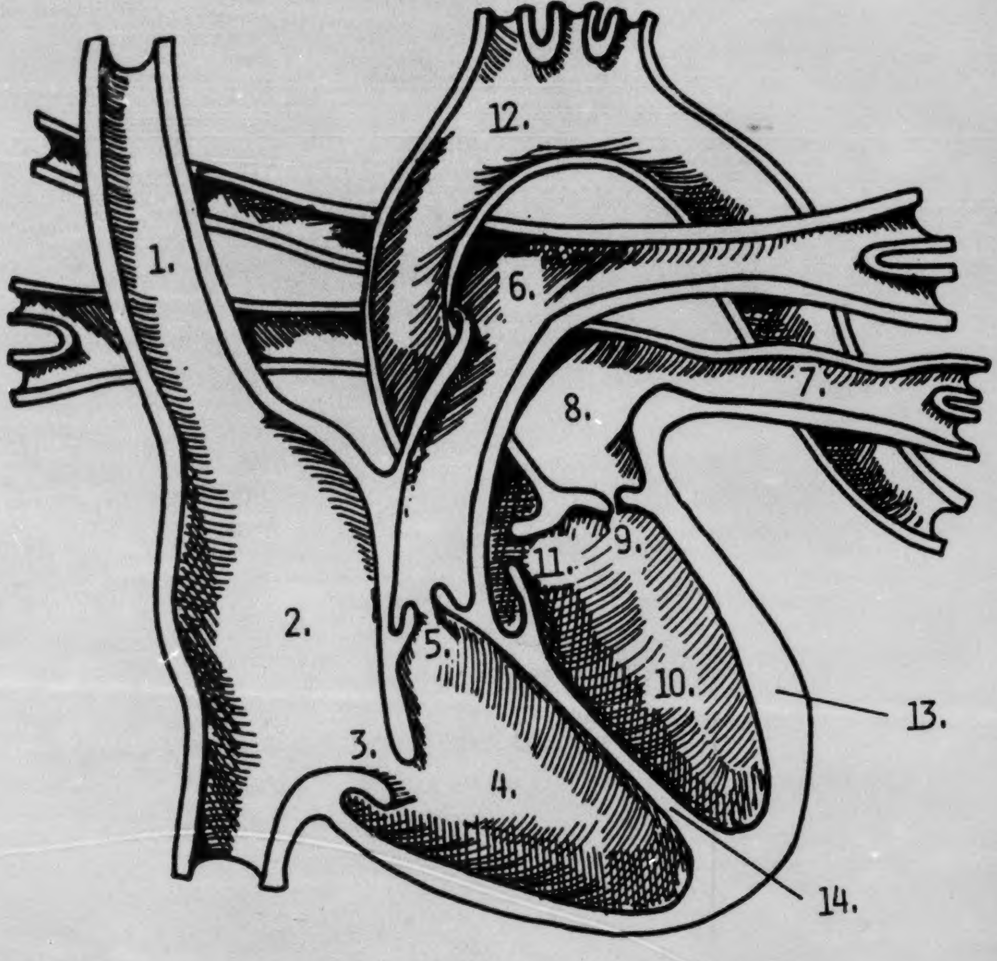
19. The function of the valves in the heart is to ___________________________ .

    ____

20. The coronary arteries supply the ____________________ with blood.

LEARNING ACTIVITIES - continued

21. Label each part of the heart on the diagram and using arrows trace the circulation of blood through the heart. You can refer to Unit 4, Module E if you have any problems.



1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
7. ______________________
8. ______________________
9. ______________________
10. ______________________
11. ______________________
12. ______________________
13. ______________________
14. ______________________

LEARNING ACTIVITIES - continued

ACTIVITY #2. Circulatory System Terminology Exercise

Directions: Using Taber's Cyclopedic Medical Dictionary or any other resource book available, look up the definitions of the following words and write them in the spaces provided.

1. Anticoagulant: ______
2. Arrhythmia: ______
3. Ascites: ______
4. Bundle of His: ______
5. Cholesterol: ______
6. Corpuscles: ______
7. Depolarization: ______
8. Diuretic: ______
9. Donor: ______
10. Dyscrasia: ______
11. Ecchymosis: ______
12. Electrolytes: ______
13. Embolism: ______
14. Erythrocytes: ______
15. Hematocrit: ______
16. Hemoglobin: ______
17. Hemophilia: ______
18. Hypertension: ______
19. Hypotension: ______
20. Hypoxia: ______
21. Infarction: ______
22. Leukocytes: ______
23. Necrosis: ______

LEARNING ACTIVITIES - continued

24. Occlusion: ______
25. Palpitations: ______
26. Peripheral: ______
27. Petechiae: ______
28. Phagocytosis: ______
29. Phlebitis: ______
30. Phlebotomy: ______
31. Polycythemia: ______
32. Purkinje System: ______
33. Purpura: ______
34. Sinoatrial: ______
35. Stenosis: ______
36. Thrombocytes: ______
37. Thrombus: ______
38. Varicosity: ______

ACTIVITY #3. Lymph-Vascular System

Directions: Read the following.

The lymph system is another set of tubes that spreads throughout most of the body. The vessels of this system start as lymph capillaries, then form lymph vessels that pass through lymph nodes and finally empty into the large thoracic duct that joins the jugular vein on the left side of the neck. The lymph system carries lymph, a clear alkaline fluid formed in tissue spaces all over the body. This system provides a way to drain surplus tissue fluid that has been stored between the cells. The lymph system maintains a state of stability for tissue fluid. Lymph nodes are dispersed along lymphatic vessels. These nodes filter the lymph by keeping undesirable matter such as bacteria from entering the blood stream. The lymph node cells also are a part of the body's immune system. The lymph node can be palpated in the neck, axilla and groin because in these places they are relatively close to the surface. Other lymph nodes are deeper. Enlargement and tenderness of the lymph due to inflammation can be a sign of some diseases.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Examination and Assessment of the Cardiovascular System

Directions: Read the following.

Using the stethoscope, the nurse listens to the heart sounds. In addition to the rate and rhythm, abnormal sounds that are present in diseases of the heart may be detected. Some of these sounds, called murmurs, indicate disease of the valves of the heart. The process of listening for these sounds is called auscultation. In order to locate an apical pulse, (POMI) point of maximal intensity, place your stethoscope on the left fifth interspace and midclavicular line. The stethoscope with long tubing has a greater incidence of interference with noise. The ear plugs should be turned inward and completely block the ears. The diaphragm picks up sounds of higher frequency with pressure. The bell picks up lower frequency with light or no pressure. If the chest is noisy and it is difficult to auscultate an apical pulse, ask the patient to hold his/her breath.

The measurement of arterial blood pressure is important in the patient examination. It often supplies vital information concerning cardiac function and the condition of the peripheral blood vessels.

Other observations include rate and character of the pulse, quality of the respirations and presence of pain, color and edema.

ACTIVITY #5. Diagnostic and Laboratory Tests

Directions: Diagnostic tests are ordered by the physician to help in making a diagnosis. It will be helpful for you to know what each of these tests is and what the various levels mean so that you will better understand your patient's condition when you read the chart on the following page.

COMPLETE BLOOD COUNT

Complete blood count (CBC) is routinely performed on anyone entering the hospital. It tells the physician if there is any infection in the body and how well the blood is being oxydized. The following chart shows the different components analyzed by a CBC and what you would expect to see.

Component	Normal Level	Function	Cause/Decrease	Cause of Increase
1. RBC-red blood cells Erythrocytes	Female: 4.5-5.4 million cells/cubic mm. Male: 4.0-4.8 million cells/cubic mm.	To transport O_2 to the cells	Hemorrhage Bone marrow failure Iron deficiency	Overgrowth of bone marrow Decrease in total fluid in the blood
a. Hemoglobin	12-15 GM/100 ml of blood (Note: There are differences between the male and female valves.)	Protein that combines with 0_2 (contained in RBC)	Same	Same
b. Hematocrit	41-45%/100 ml of blood	Percentage of blood that is erythrocytes	Same	Same
2. Platelets (Thrombocytes)	250,000-500,000 per cubic mm. of blood	Clots the blood or stops bleeding or hemorrhaging	Called thrombocytopenia Cause unknown	Leukemia Overgrowth of bone marrow

Component	Normal Level	Function	Cause/Decrease	Cause of Increase
3. WBC-white blood cells Leukocytes	5,000-10,000 cells per cubic mm.	Engulf and destroy bacteria and other harmful products or broken down tissue	Drug toxicity Cancer of the bone marrow Viral infections	Infections anywhere in the body Leukemias
Types of WBC:				
a. Neutrophils	56%	A significant amount of information can be gathered for the purpose either of evaluating the stages of a particular disease or of diagnosing some disease entities not directly related to the blood-making organs.	Viral infections	Bacterial infections
b. Eosinophils	1-3%			Allergic condition such as asthma
c. Basophils	0-1%			Inflammation when it is present in the body
d. Lymphocytes	20-40%			Viral infection
e. Monocytes	2-8%			In mononucleosis and inflammations or tissue necrosis
f. Segs	50-70%			Severe sepsis
g. Bands	2-6%			

LEARNING ACTIVITIES - continued

Sedimentation Rate

As the word suggests, this test measures the time it takes RBCs to settle on the bottom of the glass test tube. When a patient has an inflammation or an infection anywhere in the body, the sedimentation rate is increased. For example, rheumatic heart disease causes an increase in the sedimentation rate. When the rate returns to normal, the tissue has healed.

The normal rate for men is 0-20 mm per hour and for women 0-30 mm per hour.

Enzyme Tests

These tests are ordered when a patient has had a myocardial infarction. There are three enzymes that are released into the blood system when there is cardiac tissue destruction.

1. LDH (lactic dehydrogenase) will increase two to ten times the normal level about twelve hours after a patient has had a myocardial infarction. Normal is 165-300 units.

2. SGOT (serum glutamic-oxalacetic transaminase). This enzyme can increase to twelve times the normal level within 24 hours. Normal 10-14 units.

3. CPK (creatine phosphokinase). CPK is considered the most specific of the three enzymes because it is found mainly in heart tissue. It also shows an increase within two to five hours, which is much sooner than the other two. The normal for men is 71 units and for women, 55 units.

Enzyme values will vary among different hospitals depending on how the test is performed, so you must read the lab slip. It will tell you what the normal is for that institution. It is not necessary to memorize the normals given here because they will vary.

Serum Cholesterol

Cholesterol is a substance related to fats and is found in large quantities in egg yolks and in animal fats. There is a high relationship between elevated levels of cholesterol and coronary artery disease. The normal level is 150-280 mg per 100 ml. of blood. If the test results show cholesterol is elevated, the physician may prescribe a special diet to bring the cholesterol level to a more normal range. (Refer to Unit 5, Module D on low-fat diets.)

Prothrombin Time

This test measures the speed in which plasma clots when another chemical is added to it. This test is usually ordered for patients on anticoagulant therapy such as coumadine or dicumarol. The physician hopes to increase the clotting time by 2 to 2 1/2 times the normal. Normal time for clotting is 11 to 18 seconds.

LEARNING ACTIVITIES - continued

Partial Thromboplastin Time

The partial thromboplastin time (PTT) is used with patients receiving heparin. Two to 2.5 times the normal is the therapeutic range. Normal time for a PTT is up to 40 seconds.

Electrocardiogram (EKG or ECG)

An EKG records the electrical activity of the heart muscle. The machine that is used for this procedure is brought to the patient's bedside by an EKG technician and the test is completed while the patient lies in bed on his/her back. A special jelly is placed on the patient's skin where the three or more electrodes or leads are placed. The electrodes are small discs attached to the machine by wires. They are usually placed on both upper arms, one or both legs and on the chest over the heart.

The patient feels nothing while the EKG is being taken. There is no pain, discomfort or stinging. After the test is completed, the patient may return to normal activities. It is important to teach the patient that this test will not cause electrocution. See Unit 19, Module B for the relationship of the EKG to heart anatomy.

Angiocardiography

This is an x-ray procedure done in a special section of the x-ray department in which a contrast medium is injected into the patient intravenously, thus enabling the physician to see how the heart and its chambers work. It also outlines the large vessels of the heart. This is also known as an angiogram or cineangiogram.

Preparation, Procedure and Postprocedure

1. Preparation
   a. Explain the procedure to the patient.
   b. Have patient sign a permit.
   c. Patient is NPO for 6 to 8 hours before the procedure is scheduled.
   d. A sedative is given 1 to 1 1/2 hours before the procedure.
   e. Question the patient carefully about allergies, since some persons are sensitive to the contrast medium.
2. Procedure
   a. Usually the patient is awake for the procedure. A local anesthetic is injected at the site where the needle will be inserted.
   b. The needle is inserted into the vein usually in an antecubital space and a contrast medium is rapidly forced into the vein or artery.

   c. X-rays are taken in quick succession, following the course of the contrast medium through the heart.

   d. The needle is removed and a pressure dressing is applied at the site.*

3. Postprocedure

   a. Vital signs are taken q 15 minutes x 4, q 30 minutes x2, q 1 hour x 2, then q 4 hours.

   b. Check the pulse that is distal to the site of injection as frequently as mentioned above.

   c. Check the dressing frequently for bleeding and for irritation at the injection site.

   d. Patient may eat.

Cardiac Catheterization

The purposes of cardiac catheterization are to measure the pressure in the heart chambers and pulmonary arteries, to obtain blood samples from the heart and vessels for determination of the amount of oxygen and carbon dioxide present, and to detect congenital or acquired defects. It may be done on the right or left side of the heart.

Preparation, Procedure and Postprocedure

1. Preparation

   a. The physician should explain the procedure to the patient.**

   b. A permit must be signed.

   c. Patient is NPO for six to eight hours before the procedure.

   d. A sedative is given one hour before the procedure.

2. Procedure

   a. The patient is awake during the entire procedure.

   b. A catheter is inserted by the physician into the antecubital or femerol vein or artery.

   c. X-rays are taken by fluoroscopy while the catheter is being passed along. The physician watches the continuous movement of the catheter on a screen similar to a television set.

---

*A pressure dressing is a bandage applied tightly to the injection site in order to prevent bleeding or a hematoma from forming.

**With this catheterization, there is a chance of complications such as tachycardia, arrhythmias or thrombophlebitis and cardiac arrest. These should also be explained to the patient before the procedure and the patient should be observed carefully after

LEARNING ACTIVITIES - continued

3. Postprocedure

   a. Vital signs are taken q 15 minutes x 1 hour and q 30 minutes x 2 hours, q 1 hour x 2, then q 4 hours.

__Directions:__ Answer the following questions by filling in the blanks or by circling "true" or "false."

1. The function of RBCs is to ____ .

2. Hemoglobin in contained in____ .

3. WBCs are increased when ____ .

4. Another name for platelets is ____ .

5. Platelets are essential for ____ .

6. The sedimentation rate is increased if there is ___________________________ .

7. When the sedimentation rate returns to normal, it means: ____________________

   ____

8. The three enzymes that are tested when a patient has had a myocardial infarction are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

9. The reason these tests are ordered is because ____________________________

   ____

10. Prothrombin time and partial thromboplastin time are usually ordered when a patient is on ____

11. The prothrombin time can be ______ times normal if the patient is on _______ therapy.

12. The purpose of angiocardiography is to __________________________________

13. An angiocardiogram is performed under a local anesthetic. TRUE FALSE

14. An angiocardiogram is an x-ray procedure. TRUE FALSE

LEARNING ACTIVITIES - continued

15. Postangiocardiogram care consists of:

    a. ______________________________

    b. ______________________________

    c. ______________________________

16. Preparation for an angiocardiogram and a cardiac catheterization are the same.
    TRUE FALSE

17. What is special about the catheter used for a cardiac catheterization?

    ____

18. After a cardiac catheterization, how often should the injection site be checked?

    ____

19. What should the nurse consider in making an assessment of the cardiovascular system in a patient?

    ____

    ____

    ____

ACTIVITY #6. Blood Types, Cross-Match and Transfusion

Directions: Read the following.

Everyone is one of four blood types - A, B, AB or O. Each type is classified by a laboratory procedure in which a blood sample is mixed with a small amount of special solution. The mixture is stirred and watched for agglutination (clotting). Depending on the reaction, blood type can be determined. In addition to the kinds of protein substances found in the four types of blood, some persons have an extra protein substance called the Rh factor. The Rh factor (either positive or negative; that is, either present or absent) is also determined by a laboratory procedure.

Some types are more common than others.

BLOOD TYPE	INCIDENCE PER 100 INDIVIDUALS
A	42
B	10
AB	3
O	45
Rh+	85
Rh-	15

LEARNING ACTIVITIES - continued

Blood type is an inherited property of an individual's red blood cells. This property becomes very important in blood transfusions. Type O patients cannot receive donors' blood belonging to types A, B or AB; only type O donors are acceptable. However, type O blood may be used for transfusion into patients with all other types. Therefore, a type O donor is called the "universal donor." Type A may receive from A or O. Type B may receive from B or O. Type AB does not agglutinate (clot) with any of the other types and may receive blood from any of them. Therefore, a AB patient is called the "universal recipient."

Cross-Match

After the blood types and the Rh factors of the recipient and potential donors are determined, a "match" must be made between the type and the Rh factor of the donor and recipient to determine if the donor's blood is compatible with that of the recipient. These are specialized laboratory procedures.

Blood Transfusion

The intravenous injection (transfusion) of whole blood (or plasma) is the most effective method of correcting a blood volume deficiency or "oligemia," whether it be due to the loss of whole blood or to a loss of plasma. A blood volume loss, which occurs rapidly and is of sufficient severity to cause circulatory failure (shock), may result from acute hemorrhage with loss both of red cells and plasma or from leakage of plasma in tissues that have been burned. Some blood transfusions are given for reasons other than the two mentioned above. An example is when special blood components need to be replaced.

As a practical nurse, you will not be responsible for administering blood; however, you should understand the procedure and know what to look for in case of a transfusion reaction.

Injecting blood is similar in most respects to other types of parenteral (IV) therapy. Some special considerations are that blood must be kept cooled before administration and should be administered by a closed-system technique or, if the collection bag is used in administration, by a filter.

The R.N.'s first step in any transfusion is to check the name and the hospital number on the unit of blood against the name and the hospital number on the blood sheet sent up from the lab. Two Registered Nurses must check this together. Then, before adding the blood to the already infusing IV of normal saline (Nace), they will check the name and the hospital number on the unit of blood against the patient's name band. This is a must!!!

On occasion, a patient may refuse to have a blood transfusion. For example, if the patient is a Jehovah's Witness, he/she might not accept a blood transfusion.

As a practical nurse, you will take the patient's temp before and after the unit is infused. You may be asked to observe the patient closely for at least 15 minutes after the beginning of a transfusion. During this time, the infusion rate should not exceed 20 drops per minute. Following this, the usual observations for parenteral (IV) therapy are made.

LEARNING ACTIVITIES - continued

What are the five observations you should make for an IV? List them below. (Refer to Unit 8, Module G-3.)

1. ____________________

2. ____________________

3. ____________________

4. ____________________

5. ____________________

Transfusion Reaction

A transfusion reaction is a serious complication of a blood transfusion. If incompatible blood is given, a reaction will occur with symptoms evident within ten minutes. The first symptoms you will observe will be:

1. Chills
2. Headache
3. Abdominal distress
4. Increased temperature
5. Decreased blood pressure
6. Evidence of shock, dyspnea and cyanosis
7. Urticaria

If symptoms of this sort occur, stop the transfusion immediately by clamping the blood tubing, maintain the IV line. Incompatible blood can cause death!!!

Later symptoms you will observe include:

1. Small volume of red urine (may progress to uremia)
2. Nausea and vomiting
3. Weakness
4. Pain and diarrhea
5. Stupor and death

Recognition of a reaction and prompt treatment can prevent a serious outcome. Discontinue the blood immediately and call the R.N. or the physician.

LEARNING ACTIVITIES - continued

Nursing Care

Once the blood has been discontinued and the physician has been notified, nursing care consists mainly of keeping the patient comfortable. You may have to collect all of the patient's urine for the next 24 hours. The urine is collected because the reaction releases a toxic substance that causes the vessels in the kidneys to spasm and could eventually cause kidney failure. Therefore, urinary output is watched closely.

Other transfusion complications

1. Overloading the heart and/or circulatory system may cause pulmonary congestion (pulmonary edema). Giving too much fluid too fast can cause this, especially in elderly patients or in those with heart conditions. Immediate symptoms are restlessness and confusion, then dyspnea and cyanosis.
2. Infections may be contacted by the recipient if there are disease-causing organisms in the donor's blood. The most common diseases are hepatitis and malaria.
3. Allergic reactions, though uncommon, may occur in the form of urticaria (hives) or asthma.

ACTIVITY #7. Blood Dyscrasias

Directions: Read the following.

Anemia

Anemia is a condition in which either the number of circulatory RBCs or the amount of hemoglobin in the RBCs is decreased.

The most common causes of anemia are:

1. Decreaed RBC production by the red bone marrow possibly caused from bone marrow tumors or from nutritional deficiencies of protein, iron or folic acid.
2. Hemorrhage
3. Increased destruction of RBCs by the spleen or by the liver.
4. Frequently the cause is unknown.

Signs and Symptoms

As you can imagine, if there are fewer RBCs or hemoglobin in the blood, there will be less oxygen in the blood. This means that the tissues will not make the energy they need to function. Therefore, no matter what the cause of the anemia, the effect on the tissues will be the same and the signs and the symptoms will also be the same. Symptoms include:

1. Vertigo (dizziness)
2. Syncope (faintness)

LEARNING ACTIVITIES - continued

3. Thirst
4. Pallor
5. Tachypnea
6. Hypotension
7. Tachycardia

The person who is mildly anemic may become fatigued, short of breath and diaphoretic when walking upstairs or doing any type of exertion. How severe the symptoms are depends on how rapidly the patient became anemic. If a person loses 50% of his/her RBCs over a year or so, there may be no signs of anemia other than tachycardia and paleness. But if a person loses only 30% of his/her RBCs rapidly by hemorrhaging, the circulatory system will collapse and the person will probably go into shock and coma.

Nursing Care

The number one priority in the care of any patient who is anemic is to find out why the patient is anemic and then, eliminate its cause. The action the physician takes depends on the cause of the anemia. If the spleen is destroying the RBCs, a spleenectomy will be performed. If the patient is hemorrhaging internally, an exploratory laparotomy will probably be performed. If the patient does not have enough blood volume, a transfusion of one or more units of blood will be ordered.

The nurse can make the patient as comfortable as possible by eliminating some of the activities that cause the patient to experience signs of anemia. Examples are:

Patient Problem	Nursing Approach
1. Vertigo and Syncope	Encourage patient to move slowly and to sit on the side of the bed for a moment before standing up. Discourage bending at the waist to pick up anything off the floor. Encourage short walks and frequent rest periods. Suggest sitting on a chair in the bathroom when doing a.m. or p.m. care.
2. Weakness due to poor diet	Suggest the patient eat foods high in iron (liver, meat, green leafy vegetables, enriched grains, dried fruit). Orange juice or grapefruit juice should be taken everyday because they are rich in Vitamin C that helps to absorb iron. Sufficient quantities of folic acid and Vitamin B should be included in the diet.

Medications that might be prescribed are from the hematinic classification. Two of these are Feosol and Imferon.

LEARNING ACTIVITIES - continued

Pernicious Anemia

Pernicious anemia is incurable, but controllable. This anemia is caused by the inability of the stomach lining to produce a substance, intrinsic factor, that aids in the absorption of vitamin B_{12}, extrinsic factor, which is a necessary element in RBC production. Without vitamin B_{12}, the RBCs either become very large (macrocytic) or become abnormally shaped.

There is no cure for pernicious anemia because the medical profession does not know how to stimulate the stomach mucosa to produce the intrinsic factor. We can, however, give vitamin B_{12} shots monthly, which will increase the production of the RBCs and decrease their size to normal.

Signs and Symptoms

Besides the usual symptoms of anemia, the patient may experience burning or sores in the mouth and on the tongue and gastrointestinal upsets due to lack of HCL from the stomach mucosa. A lack of vitamin B_{12} (cyanocobalamin) affects the nervous system causing numbness, tingling and burning in the hands and feet. This is a late sign of pernicious anemia and is not always reversible once the patient starts taking vitamin B_{12} injections. The patient may also experience personality changes and become irritable and depressed, but this is reversed once treatment begins.

Nursing Care

The three most important responsibilities of a nurse caring for a patient with pernicious anemia are:

1. Instruct the patient on the importance of a balanced diet and encourage a balanced diet.

2. Reinforce the physician's explanation of the necessity of the patient's remaining on regularly scheduled treatment for the rest of his/her life.

3. Inform the patient about available community resources such as public health nurses. Encourage the patient to contact such sources. Hopefully, this will insure that someone will visit the patient and increase the likelihood that the patient will receive the needed monthly injections of vitamin B_{12}.

ACTIVITY #8. Shock

Directions: Read the following.

Shock is a disturbance in the circulation that results in a decreased blood flow to tissue or a lack of oxygen to the tissues (hypoxia).

Below are three basic types of shock and their causes.

1. Hypovolemic shock: Decreased blood volume

    a. Hemorrhage during or after a surgical procedure or trauma caused by an accident.

LEARNING ACTIVITIES - continued

   b. Loss of plasma caused by burns

   c. Dehydration caused by lack of fluid intake, severe vomiting or diarrhea

2. Cardiac shock: The heart fails to pump a sufficient amount of blood to the vital organs.

   a. Congestive heart failure

   b. Myocardial infarction

   c. A collection of fluid around the heart (cardiac temponade)

3. Neurogenic shock: Usually a momentary type of shock caused by a lack of sympathetic nerve stimuli to the blood vessels. This causes the vessels to dilate, blood then fills the peripheral vessels in the extremities, and not in the vital organs.

   a. Spinal or deep general anesthesia

   b. Brain damage

   c. Certain drugs such as histamines are released in allergic reactions and cause vasodilation.

   d. Septic infections or bacterial infections spread throughout the body usually in the bloodstream.

   e. Anxiety

Signs and Symptoms

The early signs of shock are:

1. Apprehension and restlessness.

2. Decreased blood pressure and increased pulse that becomes weak and thready.

3. Pale, cold and clammy skin.

4. Temperature decreases.

5. Rapid and shallow respirations.

6. Decreased urinary output.

7. Thirst.

If shock continues over a period of time, the patient will show signs of decreased mental ability, stupor and, eventually, coma.

A patient in shock is in a very serious condition. Lack of oxygen to any vital organ may cause failure of that organ to function properly.

LEARNING ACTIVITIES - continued

Decreased blood supply has what effect on the following organs? Discuss your answers with your instructor.

Kidneys: ______________________________

Heart: ______________________________

Lungs: ______________________________

Liver: ______________________________

Treatment

Medical treatment for each of the three basic types of shock is different. Before further nursing care can be given, it is necessary to determine the type of shock and to determine the cause of the shock so that the effects can be reversed. The aim of each treatment, however, is to maintain an oxygen supply to the tissues.

Cause	Treatment
1. Hypovolemic Shock	1. Find source of bleeding if there is one. 2. Stop the bleeding. 3. Replace blood loss and fluid loss with transfusions and IVs.
2. Cardiac Shock	1. Increase the efficiency of the heart by giving medication (digitalis) that will help it to beat stronger.
3. Neurogenic Shock	1. Place in Trendelenberg position if it does not interfere with respirations or if increased intracranial pressure is not indicated. 2. Medications such as antihistamines or epinephrine are given to constrict vessels.

LEARNING ACTIVITIES - continued

The nursing care for a patient in shock involves all of the following approaches.

Nursing Approach	Rationale
1. Frequent vital signs q 5 to 15 minutes.	1. Decreased blood pressure and increased pulse and respirations are the first signs of shock so should be observed closely.
2. Keep patient warm, but do not allow patient to perspire from heat.	2. Perspiring is a sign that the peripheral blood vessels are dilating, which is exactly what you want to avoid. It also increases fluid loss.
3. Position patient flat in bed until the physician orders otherwise.	3. (a) Lowering the head may make breathing difficult or may increase intracranial pressure. (b) Elevating the feet may increase venous return to the heart but it may also increase bleeding.
4. Relieve pain and decrease apprehension by explaining any procedures and by reassuring the patient.	4. Pain and emotional upset can cause shock or make it worse.
5. Oxygen via mask.	5. To increase oxygen being transported by the blood.
6. Maintain IV rate and check frequently for infiltration.	6. The IV is needed for fluid replacement, electrolyte replacement and as a route for medication.
7. Force fluids orally if able to drink.	7. Another source of fluid replacement.
8. Accurately monitor intake and output, patient may be catheterized for hourly urine output.	8. (a) The best way to monitor fluid replacement is with accurate intake and output. (b) You will want to check kidney function since it may be decreased in shock.

It is important to know the signs of shock and one of the most important things to do is to observe for signs of shock.

LEARNING ACTIVITIES - continued

A postop patient can go into shock.

A patient receiving penicillin for the first time can go into shock from an allergic reaction.

A patient admitted to the emergency room in severe pain from a broken leg can go into shock.

Can you list two more possible causes of shock?

1. ____________________

2. ____________________

ACTIVITY #9. Atherosclerosis and Arteriosclerosis

Directions: Read the following.

Atherosclerosis and arteriosclerosis both affect the layers of the arteries but each disease affects them in a different way. Study the differences below.

	Arteriosclerosis	Atherosclerosis
1. Which part of the artery is affected?	1. The wall of the arteries.	1. The inner lining of the arteries.
2. How is it affected?	2. Calcium deposits on the wall.	2. Deposits or plaques of lipids, mostly cholesterol, adhere to the lining.
3. What are the effects of disease?	3. The arteries lose their elasticity and become a fixed size.	3. The opening of the artery (lumen) becomes narrow.
4. Which arteries are affected?	4. Mostly the peripheral arteries.	4. The large arteries such as the aorta or the coronary arteries.

Signs and Symptoms

Both atherosclerosis and arteriosclerosis result in a decrease in blood supply. The atherosclerotic patient has clogged vessels, mainly in the aorta, coronary arteries and large arteries in the brain. Arteriosclerosis is more generalized and prevents the arteries from expanding and contracting. They are "hardened."

LEARNING ACTIVITIES - continued

Nursing Care

Nursing care for a patient with arteriosclerosis is the same as nursing care for a patient with poor circulation to the extremities. Therefore, be careful when you:

1. Cut toenails and fingernails
2. Place warm packs on extremities

Be sure the patient always wears slippers to prevent cutting himself/herself. The patient should be taught to take special care of any cuts or burns since gangrene could easily become a complication from the smallest break in the skin.

A patient with atherosclerosis should understand the necessity of a diet low in saturated fats and a routine of rest and activity. The patient should never become too exhausted because it takes much longer to recover. Remember, atherosclerosis is easier to prevent than to arrest. People must eat fewer saturated fats and reduce cholesterol!!!

ACTIVITY #10. Cardiovascular Nutrition

Directions: Read the following.

Cholesterol and saturated fats have long been recognized as factors contributing to heart disease. The average individual in the United States consumes 600 mg. of cholesterol in a daily diet. In addition to this, a large quantity of cholesterol is formed in the body, primarily in the liver.

The intake of saturated fats causes the body to produce cholesterol. Therefore, to decrease blood cholesterol significantly, a diet low in both saturated fat and cholesterol is usually necessary.

Uses of Cholesterol

1. Forms bile salts for fat digestion
2. Small amounts used in the production of hormones
3. Large amounts in skin that prevent water absorption and evaporation
4. Precusor to vitamin D

Heart and blood vessel disease continues to kill more than one million Americans each year, with heart attacks alone claiming over 600,000 lives. The American Heart Association states that a diet low in animal or saturated fats and cholesterol reduces blood cholesterol levels and considerably reduces the risk of heart attack.

LEARNING ACTIVITIES - continued

The LPN can play a big role in heart disease prevention by being prepared to teach people, particularly those with a high risk of coronary disease, about modifying dietary habits. Three major factors contributing to premature coronary heart disease are: (1) elevated blood cholesterol, (2) elevated blood pressure and (3) cigarette smoking.

Recommendations regarding diet include:

1. Maintain or achieve optimal weight by adjusting calories.
2. Reduce cholesterol intake.
3. Reduce dietary intake of saturated fats by substituting vegetable fats when possible.

Many sources of protein are high in cholesterol and saturated fats. Eggs, particularly egg yolk, are an example of this. In modifying the diet in this way, it is important to prevent decreased protein intake.

It is difficult to change long-standing dietary habits. It is hard to give up dairy products and delicious desserts even if we know it may save our arteries and our heart. Start now to help yourselves, your families and others. You need to know the foods high in cholesterol and saturated fats.

Protect yourself, then teach others to do the same!!

Look up these two medications: Atromid-S and Choloxin. Discuss how they are important to a patient with heart disease.

ACTIVITY #11. Review Exercise

__Directions:__ Answer the following questions.

1. The most effective method of correcting a blood volume deficiency is ________

   ____

2. Explain how an R.N. would check to be sure that the correct patient received the correct blood.

   ____

3. List five symptoms of transfusion reaction.

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

LEARNING ACTIVITIES - continued

4. In case of a transfusion reaction, you would ______________________________

____

5. Three common causes of anemia are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

6. Fewer RBCs or hemoglobin means less __________ in the blood.

7. Symptoms of anemia will appear more rapidly if ______________________

____

8. List three nursing approaches taken to decrease vertigo or syncope.

   a. ______________________________

   b. ______________________________

   c. ______________________________

9. Pernicious anemia is caused by ______________________________ .

10. Lack of vitamin B_{12} affects RBCs by making them ____________________ .

11. The three responsibilities of a nurse caring for a patient with pernicious anemia are:

    a. ______________________________

    b. ______________________________

    c. ______________________________

12. The three causes of shock are:

    a. ______________________________

    b. ______________________________

    c. ______________________________

LEARNING ACTIVITIES - continued

13. Symptoms of shock are:

a. ______________________ d. ______________________

b. ______________________ e. ______________________

c. ______________________ f. ______________________

14. All treatment for shock is aimed at ______________________ .

15. A patient in shock should not be so warm that he/she perspires because ______
____

16. Fluid intake should be encouraged for a patient in shock because ____________
____

17. To decrease cholesterol, one should eat a diet low in ____________________
____

18. List three changes you could make in your diet if you wanted to decrease your cholesterol intake.

a. ____

b. ____

c. ____

19. "Hardening of the arteries" is medically called ______________________ .

20. Atherosclerosis is caused by ______________________ .

21. The arteries most effected by atherosclerosis are ______________________ .

22. Both arteriosclerosis and atherosclerosis cause a(n) ______________________
____

23. What complication would a patient with arteriosclerosis develop from a cut?
____

24. Corrective diet can help to reduce the chances of ______________________
____

LEARNING ACTIVITIES - continued

ACTIVITY #12. Cardiovascular Diseases

Directions: Read the following.

Thrombophlebitis

A thrombophlebitis is an inflammation of the wall of a vein accompanied by a clot. This occurs most frequently in the legs, thighs and pelvic region. Thrombophlebitis occurs in these areas because of blood stasis in the lower extremities. Sitting for long periods of time, such as when driving on a long trip, could encourage an inflammation and a clot to form in a leg vein. Postop patients of all surgeries or patients bedridden for any reason are in constant threat of thrombophlebitis due to the inactivity and stasis of the blood.

Signs and Symptoms

The symptoms include pain, redness and warmth on the skin directly above the vein that has the inflammation. The entire limb may swell and be tender to the touch. The pulse and temperature may be elevated, too.

The greatest danger from thrombophlebitis is the possiblity of the clot or part of the clot breaking away and traveling to a vital organ. Therefore, when caring for a patient with thrombophlebitis, you must keep this possibility constantly in mind.

Physician's Orders and Nursing Care	Rationale
1. Complete bedrest until all physical symptoms have disappeared for several days.	Helps to prevent a part of the clot from breaking away and traveling.
2. Elevating the affected extremity at all times.	Helps to increase venous return to the heart and to decrease edema.
3. Warm, moist packs applied continuously to the entire extremity (with a doctor's order only).	Increases circulation and, therefore, clears up the inflammation.
4. Anticoagulant therapy according to doctor's order.	Decreases chance of the clot becoming larger or new clots forming.
5. Elastic stockings as soon as the patient is allowed to sit or walk. (TED hose are commonly used.)	Stockings help to compress the veins so that blood cannot pool there.
6. Circulation check of the extremity involved.	Part of assessing condition.

LEARNING ACTIVITIES - continued

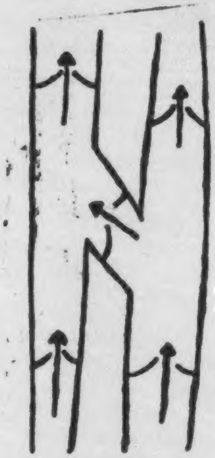
Always check the physician's orders. Some physicians may prefer their patients to be up and about while others want the extremity packed in ice.

Never, never rub the extremity!!! This may loosen the clot from the wall of the vein and you may lose a patient.

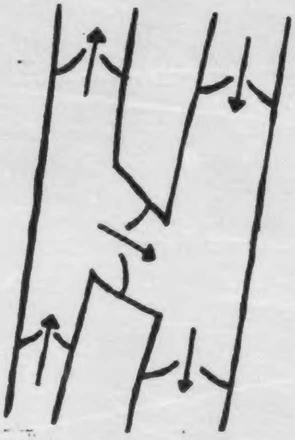
Varicose Veins

Varicose veins (varicosities) are the veins, usually in the legs and/or rectum, that become dilated and the valves do not function. Since blood has to pull against gravity to get from the toes to the heart, the veins must be strong and the valves must function properly or the blood will not be able to reach the heart. Muscular activity, such as walking, helps the blood travel from the legs to the heart.

Factors that contribute to this condition include heredity, standing for a long period of time, increased pressure on abdominal veins as with pregnancy, abdominal tumors, obesity and phlebitis of the veins. It should be emphasized that varicosities may reoccur and, therefore, it is important to eliminate the cause even after surgery has been performed.



Correct functioning of valves in veins



Valves not functioning properly and blood is traveling to the feet instead of to the heart.

Signs and Symptoms

Varicose veins can be seen and felt through the skin if they are superficial. They appear as darkened, enlarged, twisted vessels with knots or lumps felt and seen at some spots. The veins become more dominant when the patient stands or sits with legs crossed. The patient may feel symptoms of fatigue, heavy feeling in the leg and cramps in the leg at night. The leg is also susceptible to inflammation of the vein and stasis ulcers of the leg.

LEARNING ACTIVITIES - continued

Prevention and Treatment

Four steps can be taken to help prevent varicose veins from becoming worse or to treat mild cases. All of these steps will improve circulation to the extremities. They are:

1. Frequently changing position of the extremities (elevate legs 3 to 4 times a day).
2. Wearing elastic or support hose such as TED hose.
3. Avoiding constricting clothing such as garters around the legs.
4. Restricting intake of fluids.
5. Not crossing knees or ankles.

If surgery is necessary, there are two types:

1. Ligation is the tying off of a major vein to prevent blood flow to the varicosities. This is usually done near the groin.
2. Stripping is the removal of varicosed veins through small incisions at the groin, knee and ankle. Eventually, other veins will take over the function of the removed veins. The patient will have sterile dressings over the incisions and ace bandages from toes to groin.

Nursing care after surgery should include:

1. Checking pedal pulse to make sure that the bandages are not too tight and hindering circulation, checking capillary refill to make sure the extremity is getting an adequate supply of circulation. Movement of toes and ankles should be present. Both extremities should be warm to touch, and there should be no complaints of numbness or tingling in toes.
2. Checking dressings for drainage.
3. Elevating the foot of the bed to aid in venous return to the heart and to decrease the chance of edema in the toes.
4. Frequent ambulations usually starting the night of surgery. The physician may order ambulation q 1 h. This will help to prevent emboli from forming.

The patient is going to have difficulty walking because the ace bandages make it difficult to bend the knees. Be sure to assist with ambulation at all times and help to protect the patient from falling, tripping or stubbing a toe. The patient will need more help than probably either one of you realize.

Buerger's Disease

Buerger's disease is an inflammation of the arteries and the veins of the legs that progresses until the vessels are thrombosed and occluded. No one knows what causes the inflammation at first, but smoking has been a proven factor in the progression of the disease. Men between the ages of 25 to 45 are most frequently the victims of this disease.

LEARNING ACTIVITIES - continued

Signs and Symptoms

Symptoms of this disease are cramping and pain in one or both lower extremities after exercise. The affected leg is cold and cyanotic and usually tingles or is numb when dangling. Later, as the disease progresses, ulcerations with gangrene occur. There are red, painful lumps under the skin over the inflamed veins. These symptoms are usually aggravated by chilling, smoking or emotional upset.

Nursing Care

All of the medical and nursing care given to this patient is given to improve the circulation to the lower extremities and to protect them from trauma.

The one thing that can stop Buerger's disease from spreading is to quit smoking!!! This cannot be emphasized enough. Smoking causes the vessels to constrict, a situation that must be reversed when the vessels are already narrowing.

SO, STOP SMOKING!!!

Study the following section of a nursing care plan for a patient with Buerger's disease.

Patient Problem	Nursing Approach	Rationale
Poor circulation to extremities.	Elevate feet while sitting.	Keep blood from pooling in the legs.
	Exercise. Alternate raising and lowering of legs to patient's tolerance.	Promotes development of other unaffected vessels in the legs.
Susceptible to gangrene in the lower extremities.	Keep patient's feet clean and dry.	Decreases chance of breaks in the skin.
	Well-fitting shoes.	Decreases chance of ingrown toenails and bunions. Tight shoes decrease circulation.
	Patient must always wear warm socks when in the cold.	Coldness aggravates the disease and constricts blood vessels.
	Never apply heat to extremity.	Heat increases the blood requirements to the area that cannot handle it.
	Properly cut toenails.	Even the smallest cut is difficult to heal.

LEARNING ACTIVITIES - continued

Treatment

Medical treatment includes vasodilating drugs such as vasodilan and sympathectomy. The sympathetic nerves constrict the blood vessels. Therefore, cut the nerves and the vessels will be permanently dilated.

Raynaud's Disease

Raynaud's disease is characterized by spasms in the arteries usually in the upper extremities. The cause of the spasms is not known, but smoking is a definite factor. Women between the ages of 18-30 are most likely to develop the disease.

Since circulation is the central factor in this disease, the nursing care for Buerger's disease also applies to this disease. The symptoms for the two diseases are also the same. Vasodilating drugs such as vasodilan and cyclospasmol are used to dilate the vessels.

Complete the care plan below for a patient with Raynaud's disease.

Patient Problem	Nursing Approach	Rationale

LEARNING ACTIVITIES - continued

Aneurysm

An aneurysm is an outpouching or dilitation of the middle wall of an artery. An aneurysm may be found in arteries anywhere in the body. The usual cause is arteriosclerosis. Infections and congenital weaknesses are also common causes.

Signs and Symptoms

Symptoms for this disease depend on the location of the aneurysm. It may eventually become a palpable mass, where a heartbeat can be felt, and it may put pressure on surrounding organs and nerves causing a great deal of pain. The best way for the physician to diagnose an aneurysm is by ordering an angiogram.

Treatment

The only curative treatment for an aneurysm is to have it removed and replaced by a graft. Until surgery, the patient should be kept on bedrest or at least decrease physical activity to reduce the work load of the heart. Medication may be given for pain. Vital signs should be taken frequently.

Surgery involves the removal of the aneurysm from the artery and replacing it with a teflon or a dacron tube. The patient that has this type of surgery is usually an elderly person and, therefore, is often a poor surgical risk. But it is still the only way to cure an aneurysm.

After surgery, the patient is usually sent to the intensive care unit for a few days.

Study the following section of a nursing care plan for a patient following surgery to correct an aneurysm.

Patient Problem	Nursing Approach	Rationale
Decreased circulation to lower extremities and to vital organs.	Check pedal pulses frequently.	One way of checking if fresh blood is reaching the feet.
	Check vital signs q 15 minutes until stable then q 1 h to 4 h.	Decreased circulation may be caused from decreased circulating blood due to bleeding.
	Check urinary output q 1 h.	Check for kidney failure due to decreased blood supply to the organ.
Improper positioning.	Keep patient flat in bed, especially the legs.	Pressure in the groin or popliteal space will decrease the blood supply to the legs.
	Turn to side q 2 h.	You do not want stasis of blood anywhere.

LEARNING ACTIVITIES - continued

Bacterial Endocarditis

Bacterial endocarditis is the inflammation of the membrane that covers the heart valves and lines the cavities of the heart. It is caused most frequently by the bacteria streptococci. The strep bacteria may get into the bloodstream and onto the heart valves usually after the person has had a sore throat, a tooth extraction or genitourinary or rectal surgery. As the strep bacteria start their colonies on the valves, they cause the valves to become shorter and stiffer. Eventually a backflow of blood enters the atrium from the ventricles and the ventricles from the aorta and the pulmonary artery.

Signs and Symptoms

Early symptoms of bacterial endocarditis include a slight fever, alternating chills and sweating, malaise and fatigue. The patient may ignore these symptoms thinking that it must be the flu. Later, the patient develops anorexia, anemia, weight loss, increased pulse and small painful swellings on the tips of fingers and toes.

Treatment

Medical treatment includes blood cultures to isolate the organism causing the inflammation and then a two to six week administration of antibiotics. Although antibiotics have made it possible to cure most patients, any damage done to the heart valves is irreversible.

Nursing Care

The nurse should make the patient with bacterial endocarditis as comfortable as possible since the patient will probably be on complete bedrest or bathroom privileges only. Try to provide the patient with activities that will not be too tiring but will keep his/her mind occupied. Vital signs should be checked frequently and fluids encouraged.

The nurse can be of additional help by teaching the prevention of such complications through the early treatment of sore throats, colds and sores in the mouth. Also, the nurse should instruct a patient who has just had surgery to take any antibiotic that the physician prescribes until the prescription is gone. This is a prophylactic measure that is very important in decreasing the incidence of endocarditis.

Rheumatic Heart Disease and Mitral Stenosis

As with bacterial endocarditis, rheumatic heart disease (RHD) is caused by a streptococci bacteria that causes scar tissue to grow on either the endocardium, the myocardium or the pericardium.

Signs and Symptoms

The symptoms that accompany this disease are sore throat, increased temperature, anemia and joint tenderness. The lab reports that help diagnose RHD are an elevated WBC and sedimentation rate.

LEARNING ACTIVITIES - continued

Nursing Care

Nursing care and prevention are similar to that for bacterial endocarditis. Vital signs are taken frequently. Keep the patient quiet and comfortable until the temperature and the joint pain has decreased.

About 50% of the people who have had rheumatic heart disease also develop mitral stenosis. Mitral stenosis is a disorder in which the orifice of the mitral valve narrows, making it difficult for the left atrium to empty into the left ventricle. This causes the left atrium to become enlarged. It may also cause a backup of blood into the pulmonary veins and subsequent lung congestion.

Signs and Symptoms

Symptoms of mitral stenosis are cyanosis, shortness of breath, dyspnea, orthopnea and frequent coughing. The radial pulse may also be irregular and weak.

Physician's orders and treatment may include:

1. Sodium-restricted diet.
2. Daily weight check.
3. Diuretics.
4. Mitral commissurotomy (releasing the tissue that is pulling on the valve making it stiff and the opening small).
5. Valve replacement.
6. Strict intake and output.

Hypertension

Hypertension is defined as a systolic pressure of 160 and a diastolic pressure of 90 when at rest. The diastolic is more significant since it tells what the blood pressure is on the artery. In most cases, the cause of hypertension is unknown or is secondary to another disease such as kidney disorders, adrenal gland disorders or central nervous system disorders. Increased tension within the arteries can also lead to left ventricle enlargement and, finally, congestive heart failure or myocardial infarction.

The main point is that no one has "just" high blood pressure. Either it is caused by another disease or it will cause another disease. It is serious.

Signs and Symptoms

The heart, brain, kidneys and eyes show the symptoms of hypertension the most.

LEARNING ACTIVITIES - continued

Brain:

1. Headache in the morning
2. Nervousness
3. Dizziness

Eyes:

1. Loss of or failing vision
2. Retinal hemorrhage

Kidney:

1. Nocturia
2. Kidney failure

Heart:

1. Palpitations
2. Cardiac enlargement
3. Angina pectoris
4. Dyspnea on exertion

Treatment

There are many, many antihypertensive medications now on the market to help lower blood pressure. Some decrease resistance of arteries, some decrease the volume of blood by increased urinary output and still others decrease tension and nervousness.

The best treatments for hypertension are also preventive measures. The physician's orders may include:

1. Low-sodium diets.
2. Weight reduction diets.
3. Restriction of coffee, tea and tobacco.
4. Daily weight check.
5. Learning to decrease anxieties and tensions by changing daily habits.

Wouldn't all of these measures be good for all of us too?

LEARNING ACTIVITIES - continued

ACTIVITY #13. Review Exercise

Directions: Answer the following questions by filling in the blanks.

1. A thrombophlebitis is a/an: ________________________________

2. Persons most susceptible to getting thrombophlebitis are:

   a. ________________________________

   b. ________________________________

   c. ________________________________

3. A grave complication of thrombophlebitis is ________________________________

   ____

4. A patient with a thrombophlebitis should keep his leg elevated because ________

   ____

5. Never ________________ ________________ the extremity with an inflammation in the vein.

6. Valves in the veins keep the blood from ________________________________

7. A mild treatment for varicose veins includes:

   a. ________________________________

   b. ________________________________

   c. ________________________________

   d. ________________________________

8. A patient having vein stripping may have to be ambulated q 2 to 4° because

   ____

9. Complete the chart on the next page comparing Buerger's disease to Raynaud's disease.

LEARNING ACTIVITIES - continued

	Buerger's disease	Raynaud's disease
1. Sex Affected	1.	1.
2. Definition of Disease	2.	2.
3. Causes of Diseases	3.	3.
4. Symptoms	4.	4.

10. Eliminating which factor can cause a disappearance of all symptoms of Buerger's disease? ______________________________

____

11. An aneurysm is a/an ______________________________

12. An aneurysm can be cured by ______________________________

13. You would check urinary output q 1 h on a patient who has just had an aneurectomy because: ______________________________

____

LEARNING ACTIVITIES - continued

14. The bacteria that most frequently causes endocarditis is ____________________

15. The valves become ______________ and ______________ because of the bacterial colonies.

16. The prevention of bacterial endocarditis is ________________________________

17. Symptoms of rheumatic heart disease are:

    a. ____

    b. ____

    c. ____

18. Mitral stenosis is a disorder ________________________________

19. Hypertension is a systolic pressure of __________________ and a diastolic pressure of ________________.

20. Symptoms of hypertension include:

    a. ________________________

    b. ________________________

    c. ________________________

    d. ________________________

    e. ________________________

    f. ________________________

    g. ________________________

    h. ________________________

21. Medication to decrease the blood pressure have three affects on the body. They are:

    a. ____

    b. ____

    c. ____

22. List four preventive measures that could be used to decrease blood pressure.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

LEARNING ACTIVITIES - continued

ACTIVITY #14. Angina Pectoris

Directions: Read the following.

Angina pectoris is a symptom created by a decreased blood supply to the heart that causes myocardial hypoxia. The decreased blood supply is a result of spasms in the coronary arteries caused by atherosclerosis.

Signs and Symptoms

The most pronounced sign of angina is a sudden pain and pressure felt under the sternum and possibly radiating down the left arm. There is no change in the pulse or the blood pressure. This condition usually occurs after exertion. Over a period of years, it takes less exercising to cause the pain.

Along with the physical pain, the patient also experiences a feeling of "death is just around the corner" and the patient is right. At any time, the atherosclerosis causing angina could lead to a myocardial infarction. This, though, only adds to the discomfort and to a person's fears.

Physician's orders may include medication such as nitroglycerin or amyl nitrite that dilates the coronary arteries. The medication should be carried with the patient at all times. The patient should not even go to the bathroom without medicine.

When having an angina attack, the patient should:

1. Place a nitroglycerin tablet under his/her tongue and not swallow until the saliva has completely dissolved the tablet. If medicine is not available, give the person a shot of brandy or whiskey!!
2. Stop doing everything and REST immediately!

To help to prevent an attack, the patient should be instructed to:

1. Learn to eliminate activities that produce the chest pain.
2. Maintain normal weight or slightly lower than normal weight.
3. Stop smoking (smoking constricts arteries).
4. Avoid cold weather or dress accordingly.
5. Learn to cope with stressful situations.

LEARNING ACTIVITIES - continued

ACTIVITY #15. Myocardial Infarction (M.I.)

Directions: Read the following.

Myocardial infarction is the destruction of heart tissue due to deprivation of an adequate blood supply. The blood supply is shut off after an embolus or atherosclerosis obstructs the coronary artery. The obstruction may be so complete and intensive that the heart can no longer function and the person dies, or it may cause a portion of the heart muscle to die (necrosis) but the heart continues to function.

The victim may be eating lunch, watching television or walking upstairs when the pain begins. There is no special time of day or any particular activity that predisposes a person to a myocardial infarction. The pain is usually sudden, occurring in the upper abdomen or the lower sternum area and may radiate down either arm although the left arm is usually most affected. There is a tightness in the chest and some individuals state it feels as if someone were sitting on their chest. This is accompanied by dyspnea and shortness of breath. The victim is usually pale, cold and clammy, blood pressure will drop, pulse becomes so rapid and weak it can barely be felt and respirations are rapid. All the symptoms of shock are present.

The pain persists whether the person rests or takes nitrites. The person must be taken to an emergency room immediately and admitted to a coronary care unit where special provisions will be made for the patient's care.

Immediate medical treatment by the physician includes:

1. Treatment of shock (review ACTIVITY #8, Shock).

2. Administration of vasopressin drugs to increase blood pressure and coronary performance.

3. Medication to relieve pain and, in turn, help to calm the patient.

4. Oxygen therapy to decrease hypoxia.

Nursing Care

The nursing care after the patient is settled and no longer in shock is to provide the patient with a restful environment that will help to decrease oxygen requirements and circulatory strain. The physician may order complete bedrest for a few days and then bathroom privileges, or if the patient's condition is severe, he may be on bedrest for a long period of time. Eventually the physician may order ambulation qid - only four times a day. Remember, the patient must rest and needs all the help you can give him/her to do that.

Study the nursing care plan on the following page for a patient with a myocardial infarction. Add the rationales that are not given for each of the nursing approaches.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Receiving adequate physical rest.	Give complete bedbaths, but do not necessarily finish them at one time. Wash the front of the body and let the patient rest. Then wash the back.	
	Patient may need to be fed.	
	Never rush the patient.	
	Do not allow the patient to become impacted or strain having stools.	
	Relieve pain immediately.	
	Elevate head of bed slightly.	Semi-Fowler's position has proven less taxing on the heart and, therefore, more resting.
Receiving adequate emotional rest.	Visitors should be limited to family and close friends only.	
	Visits should be short and light in conversation (do not discuss business or politics!)	
	Television should not include stressful or emotional shows.	
	Telephone calls should also be limited.	
	Explanations should be given for every procedure.	The patient will not have to worry and wonder what is happening.

LEARNING ACTIVITIES - continued

Other nursing care includes:

1. NO ice water or carbonated beverages because they may trigger an arrhythmia.
2. Small, frequent feedings instead of large meals. Large meals would require a large blood supply to the gastrointestinal tract in order to aid digestion.
3. Keep the room at a proper temperature with decreased humidity to prevent the patient from becoming restless, thereby increasing the cardiac output.
4. Suggest a weight-reduction diet if the patient is obese.
5. Suggest the patient quit smoking since it constricts the arteries.
6. OBSERVE for thrombi, emboli, arrhythmia, and/or congestive heart failure.

This is a simplified description of the kind of care given to a patient with a myocardial infarction. If you ever get a chance to observe or work in an intensive care unit or coronary care unit, have someone explain the monitors to you. There are volumes of literature on this subject and, hopefully, this small amount of information has given you a desire to learn more.

ACTIVITY #16. Congestive Heart Failure

Directions: Read the following.

Congestive heart failure (CHF) is a combination of many diseases that together cause a decrease in cardiac output and, therefore, a decrease in oxygen and nutrients to the tissues.

Either the right or the left side of the heart can fail to function properly, but if untreated, both sides will eventually fail.

The right side of the heart receives blood from all of the vital organs and the extremities. If the right ventricle cannot pump out blood properly, there will be a backup of blood in the entire system. This means that the pressure in the veins becomes so great that fluid leaks out into surrounding tissues. Thus, symptoms of right-sided heart failure are pitting edema of the ankles and legs and possibly ascites due to liver engorgement, retention of fluid and potassium (K+).

When the left side of the heart or the left ventricle fails to pump an adequate supply of oxygenated blood to the system, the blood backs up into the lungs. Therefore, one of the most outstanding signs of left-sided failure is pulmonary edema or congestion in the lungs. Again, it is caused by the increase in pressure in the pulmonary veins that causes fluid to seep into the lung tissue. Also, there is a decrease in blood supply to vital organs causing a decrease in the organs' ability to function. This can be best demonstrated by the symptoms produced in the kidneys and the brain. If the kidneys have a decreased blood supply, they are no longer able to filter the blood properly and, therefore, fluid and sodium are retained in the blood adding to venous engorgement and edema. The decrease in cerebral blood flow causes loss of memory, drowsiness and fatigue.

LEARNING ACTIVITIES - continued

Below is a list of the classic symptoms of congestive heart failure:

1. Pitting edema of the extremities
2. Ascites
3. Cyanosis
4. Shortness of breath, dyspnea
5. Moist rales (congested breathing sounds)
6. Expectorated frothy sputum
7. Fatigue
8. Apprehension (trying to gasp for breath)

Nursing Care

Nursing care for a patient who is exhaused yet cannot lie flat in bed, is gasping for breath yet unable to take deep breaths, is continuously coughing and expectorating sputum, is retaining fluid in extremities yet is unable to void, and is apprehensive and uncomfortable yet cannot relax or sleep, is never ending. The goals or expected outcomes in caring for this patient are:

1. Decrease the amount of oxygen needed by the tissues.
2. Increase efficiency of the heart.
3. Eliminate water retained by the body.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Demand for oxidized blood greater than heart can handle.	Provide as much physical rest as possible. Provide proper alignment.	Resting muscles demand less oxygen and blood than active muscles.
	Position in Semi-Fowler's position in bed or sitting in an armchair with feet elevated.	
	Give towel baths.	
	Maintain conditions at night that are conducive to sleeping. Some patients prefer a light on, a window open, only a sheet over them, a family member with them or a warm drink at bedtime.	
	Change sheets on bed from top to bottom.	Studies have shown that the patient exerts less energy if the bed is changed in this manner.
	Provide as much emotional rest as possible.	Our emotional outlook affects our physical condition. The emotionally upset patient will be restless and therefore cardiac needs will be increased.
	Allow only family and close friends to visit.	
	Inquire if patient wants a spiritual advisor to visit.	
	Listen to the patient.	

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Decreased efficiency of the heart and therefore, decreased cardiac output.	This is mostly taken care of by the physician through medication orders to decrease the heart rate but increase the effectiveness of each contraction, therefore, increasing cardiac output.	
Retaining fluid.	Diuretics ordered by physician.	Diuretics will increase urinary output and therefore, decrease retained fluid.
	Have the urinal or bedpan close enough for the patient to reach it.	
	Weigh patient daily.	By weighing the patient daily, the physician can determine how much fluid is lost. A patient in CHF may retain from 11 to 22 lbs. of fluid.
	Accurate intake and output.	Accurate intake and output is a way of accounting for fluid retention.
	Restrict fluids.	If fluids are restricted, then the patient will not retain as many fluids.
	Provide low-sodium diet.	Sodium causes water retention, therefore, if sodium is limited, water retention is decreased.
4. Difficult breathing	Position the patient comfortably, e.g. an overbed table with pillows on it so the patient can lean on it for support.	Each patient will have a special position that is easiest to breathe in.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Difficult breathing (continued)	Semi-Fowler's position with arm elevated on pillows. Sitting in a highbacked easy chair.	
	Oxygen by mask, cannula or tent per physician's orders.	Increased available oxygen will also increase the amount breathed into the lungs and picked up by the blood.

Not enough can be said about the importance of observing the patient for respiratory difficulty, color (cyanosis), edema and mood. Congestive heart failure is a serious disease and needs serious nursing care.

ACTIVITY #17. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. Signs of angina pectoris are ____________________, ________________, ______________________ and ____________________.

2. If a patient is having an angina attack, he should:

   a. ______________________________

   b. ______________________________

3. Smoking can contribute to angina because it ________________ the blood vessels.

4. With a myocardial infarction, the heart tissue is deprived of ______________

5. The heart receives its nutrients from the blood that is pumped through its chambers. TRUE FALSE

6. Angina pectoris is usually caused by much physical exercise.
TRUE FALSE

7. Symptoms of myocardial infarction include:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

LEARNING ACTIVITIES - continued

8. Nursing a patient after a myocardial infarction includes providing rest because rest decreases ______________________________

9. Ways of providing adequate physical rest include:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

10. Right-sided heart failure causes a backup of blood into the ______________ .

11. Left-sided heart failure causes a backup of blood into the ______________ .

12. When pressure in the veins increases, the fluid ______________________ .

13. When there is a decrease of blood supply to the kidneys, they ______________

    ____

14. Two symptoms of right-sided heart failure are:

    a. ______________________________

    b. ______________________________

ACTIVITY #18. Fluid and Electrolyte Balance

__Directions:__ Read the following.

About 60% of the normal adult male body consists of water. The water is distributed in a relatively constant fashion among the body's three fluid compartments:

1. Inside the cells (intracellular compartment)

2. The interstitial space (intercellular compartment or between cells, extracellular)

3. In the blood vessels (intravascular compartment)

The body maintains homeostasis, which is an equilibrium or fluid balance. When blood volume increases, too much fluid goes into interstitial spaces. If blood volume decreases, the interstitial fluid shifts into the blood.

The intracellular compartment contains the largest percentage of the body's total water volume. The extracellular fluid functions to provide the relatively constant environment required by the cells and to transport substances to and from them.

LEARNING ACTIVITIES - continued

A common type of fluid imbalance is edema. Edema results from larger amounts of interstitial fluid than is normal. Edema is common in kidney or heart disease.

The kidney tubules reabsorb water and electrolytes, they reabsorb what the body needs in order to maintain balance. The acid-base balance of the body must be maintained too. This balance is maintained, in part, by the buffer mechanism. Buffers are salts of weak acids. Sodium bicarbonate is a main buffer. This sodium in the blood combines with stronger acids and changes them to weaker acids. This decreases acid in the blood or buffers it. Respiratory and renal mechanisms help to remove excess hydrogen from the blood.

Electrolytes are chemicals or salts present in the body. Sodium is the dominant electrolyte in extracellular fluid. Potassium is the dominant one inside the cell. Any disease can disturb fluid and electrolyte balance. Severe imbalance can result in death.

Nursing functions are providing careful observations of patients, recording observations and understanding fluid and electrolyte balance. Weights should be carefully taken using the same scales, time and amount of clothing. All body fluid losses such as emesis, bleeding and diarrhea should be measured if possible.

Persons with a fluid deficit are said to be dehydrated. A loss of body water may be due to an elevated temperature or other causes. The blood shows increased concentration of sodium and chloride. Loss of sodium occurs in diaphoresis, vomiting, diarrhea and other gastrointestinal disturbances. Potassium may be lost through steroid therapy, diabetes, prolonged bouts of vomiting or diarrhea. Loss of proteins and all electrolytes occur in hemorrhage and burns. Lowered calcium and increased phosphorus occur in some bone diseases and in hypoparathyroidism.

Treatment consists of giving parenteral fluids containing the missing electrolyes. Isotonic solutions are usually given (cells neither gain nor lose water). Hypertonic solutions cause a dehydrating effect on tissues and cells. Hypotonic solutions add fluids to cells and tissues.

Several fluid and electrolyte imbalances are presented here as a reference source in order to increase your understanding of lab values and to alert you to signs and symptoms of these conditions.

1. Dehydration

   Causes:

   a. Decreased water and electrolyte intake

   b. Vomiting

   c. Diarrhea or intestinal obstruction

   d. Infection with fever

LEARNING ACTIVITIES - continued

Signs and Symptoms

a. Dry skin and mucous membranes

b. Poor skin turgor

c. Oliguria

d. Acute weight loss

e. Exhaustion

Laboratory tests:

a. Increased Hgb and Hct

b. Specific gravity of urine <1.010

2. Overhydration

Causes:

a. Excessive NaCl IV

b. Chronic kidney disease

c. Congestive heart failure

d. Decreased antidiuretic hormone

Signs and Symptoms

a. Confusion and headaches

b. Puffy eyelids

c. Rapid weight gain

d. Pitting edema

e. Moist rales and shortness of breath

f. Nausea, vomiting and convulsions

Laboratory tests:

a. Decreased Hgb and Hct

b. Specific gravity of urine >1.030

LEARNING ACTIVITIES - continued

3. Sodium Deficit

   Causes:

   a. Excessive sweating
   b. Gastrointestinal suction plus drinking water
   c. Diuretics
   d. Repeated water enemas

   Signs and Symptoms

   a. Apprehension and headache
   b. Nausea and vomiting
   c. Muscle weakness
   d. Abdominal cramps
   e. Diarrhea
   f. Convulsions
   g. Oliguria or anuria

   Laboratory tests:

   a. Sodium $<$137 Meq/L
   b. Specific gravity of urine $<$1.010
   c. Chloride $<$98 Meq/L

4. Sodium Excess

   Causes

   a. Excessive NaCl IV
   b. Tracheobronchitis with increased respirations and high fever
   c. Inadequate water intake
   d. Profuse watery diarrhea

LEARNING ACTIVITIES - continued

Signs and Symptoms

- a. Thirst
- b. Fever and flushed skin
- c. Dry, sticky mucous membrane
- d. Firm tissue turgor
- e. Oliguria

Laboratory Tests

- a. Sodium > 147 Meq/L
- b. Chloride > 106 Meq/L
- c. Specific gravity of urine > 1.030

5. Potassium Deficit

Causes

- a. Diarrhea
- b. Ulcerative colitis
- c. Severe vomiting
- d. Burns
- e. Starvation
- f. Diuretics
- g. Low-sodium diet
- h. Recovery from diabetic acidosis

Signs and Symptoms

- a. Malaise
- b. Anorexia and vomiting
- c. Paralytic ileus
- d. Distended bowel

LEARNING ACTIVITIES - continued

e. Soft muscles

f. Generalized weakness

g. Weak pulse, decreased blood pressure

h. Heart block

i. Shallow respirations

Laboratory Tests

a. Serum K+ $<$ 4 Meq/L

b. Electrocardiogram changes

6. Potassium Excess

Causes

a. Burns

b. Crushing injury with cell damage

c. Kidney disease

d. Excessive K+ IV

Signs and Symptoms

a. Irritability

b. Nausea and diarrhea

c. Abdominal cramps

d. Tingling and spasma of skeletal muscles

e. Weakness and flaccid paralysis

f. Oliguria, → anuria

g. Cardiac arrhythmia

h. Cardiac standstill

Laboratory Tests

a. K+ $>$ 5.6 Meq/L

b. Electrocardiogram changes

LEARNING ACTIVITIES - continued

7. Calcium Deficit

Causes

a. Diarrhea

b. Acute pancreatitis

c. Surgical removal of parathyroid glands

d. Hypoactive parathyroid glands

e. Excessive blood transfusions

f. Generalized peritonitis

Signs and Symptoms

a. Tingling fingers

b. Muscle cramps

c. Abdominal cramps

d. Tetany

e. Convulsions

Laboratory Tests

a. Plasma Ca $<$4.5 Meq/L

b. Electrocardiogram changes

8. Calcium Excess

Causes

a. Tumor of the parathyroid or overactive gland

b. Excessive vitamin D (example: arthritis)

c. Multiple myeloma

d. Kidney disease

e. Immobilization

Signs and Symptoms

a. Relaxed muscles

b. Flank pain

LEARNING ACTIVITIES - continued

c. Kidney stones

d. Deep pain in thigh

e. Pathological fracture

Laboratory Tests

a. Plasma Ca$>$5.8 Meq/L

9. Metabolic Acidosis

Causes

a. Diabetic acidosis

b. Decreased food intake

c. Systemic infection

d. Excessive NaCl IV

Signs and Symptoms

a. Shortness of breath on exertion

b. Disorientation, → stupor

c. Rapid, deep respirations (Kussmaul breathing)

Laboratory Tests

a. Urine Ph$<$6.0

b. Plasma Ph$<$7.35

c. Plasma bicarbonate$<$25 Meq/L

10. Metabolic Alkalosis

Causes

a. Vomiting

b. Gastric suction

c. Excessive intake of alkalies like sodium bicarbonate

LEARNING ACTIVITIES - continued

Signs and Symptoms

a. Hypertonic muscles

b. Tetany

c. Depressed respirations

Laboratory Tests

a. Urine Ph>7.0

b. Plasma Ph>7.45

c. Plasma bicarbonate> 29 Meq/L

d. Plasma K+< 4 Meq/L

e. Chloride may be < 98 Meq/L

ACTIVITY #19. Clinical Assignment

Directions: Read the following objectives specific to the care of a patient with a disease of the circulatory system. You are responsible for the patient's care as well as the general clinical objectives, when assigned to such a patient.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:

   a. Pain

   b. Fear

   c. Anxiety

2. Demonstrate the nursing procedures for diagnostic tests given to your assigned patients and determine if the test results were within normal range. Include:

   a. Laboratory tests

   b. E.C.G

   c. Angiography

   d. Cardiac catheterization

   e. Type and cross match

   f. Physical examination

LEARNING ACTIVITIES - concluded

3. Demonstrate nursing care of patients with therapy specifically related to the circulatory system. Include:
   a. Blood transfusions
   b. Elastic stockings and/or ace bandages
4. Demonstrate teaching the patient and family about diet therapy and fluid balance.

NURSING CARE OF ADULTS

Module C - Nursing Care for Patients with Diseases of the Respiratory System

RATIONALE

As the incidence of respiratory distress rises, the practical nurse will care for more and more patients with various types and degrees of respiratory disease. Prevention, early diagnosis and prompt treatment will limit years of disability. These actions require knowledge of the respiratory system and its diseases.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity 20 when given a clinical assignment of caring for a patient with a disorder of the respiratory system.
2. Identify the normal anatomy and physiology and the anatomical and the physiological changes that occur with diseases affecting the respiratory system.
3. Identify diseases related to the respiratory system.
4. Identify the most appropriate nursing actions when caring for a patient with a disease of the respiratory system.
5. Identify the procedure, postprocedure and complications of laboratory and/or diagnostic tests given to patients with diseases of the respiratory system.
6. Identify causes, common signs, symptoms and treatments for diseases related to the respiratory system.
7. Describe or name the nursing action, patient symptoms, treatments and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the respiratory system.
8. Demonstrate appropriate nursing assessments in relation to the respiratory system.

LEARNING ACTIVITIES

Directions: The information needed to complete Module C is included in this module and in the reading assignments from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the respiratory system and review Unit 4, Module F. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material in this module and in Unit 4. There are many diseases common to the respiratory system; however, the diseases discussed in this module are most commonly found

LEARNING ACTIVITIES - continued

in patients in the hospital. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

ACTIVITY #1. Introduction to the Respiratory System

Directions: Read and study Chapter 13 of your textbook, Total Patient Care (5th Ed.), entitled "Nursing the Patient with Problems of the Respiratory System." Now, review Unit 4, Module F on the anatomy and physiology of the respiratory system. After reviewing this module, answer the following questions and label the diagram. Look up the answers to the questions you do not know.

1. The organs of respiration are the:

a. ____________________ d. ____________________

b. ____________________ e. ____________________

c. ____________________ f. ____________________

2. The function of the respiratory system is to ____________________
____

3. Gas exchange takes place in the ____________________.

4. The air is moistened and warmed as it passes through the ____________________.

5. The lungs are pulled downward and out in ____________________.

6. Inspiration plus expiration equals ____________________.

7. The base of the lungs is attached to the ____________________.

8. The nerve that controls each half of the diaphragm is called the ____________ nerve.

9. The respiration center in the brain is called the ____________________.

10. This center is controlled by the amount of ____________________ in the blood.

11. The intercostal muscles and the diaphragm contract when we ____________.

12. When we exhale, the pressure in our lungs ____________________.

13. The parietal pleura is attached to the ____________________.

14. The pulmonary pleura is attached to the ____________________.

15. The space between the two pleura is called the ____________________.

LEARNING ACTIVITIES - continued

16. True respiration refers to the ______________________________________ .

17. The left lung has ________ lobes.

18. The trachea and the larynx would collapse if it were not for the ____________ .

19. The oxygen combines with the __________________ in the red blood cells.

20. All nursing action discussed in this module is directed toward _______________

    ____

21. List four protective mechanisms of the respiratory tract.

    a. ______________________________

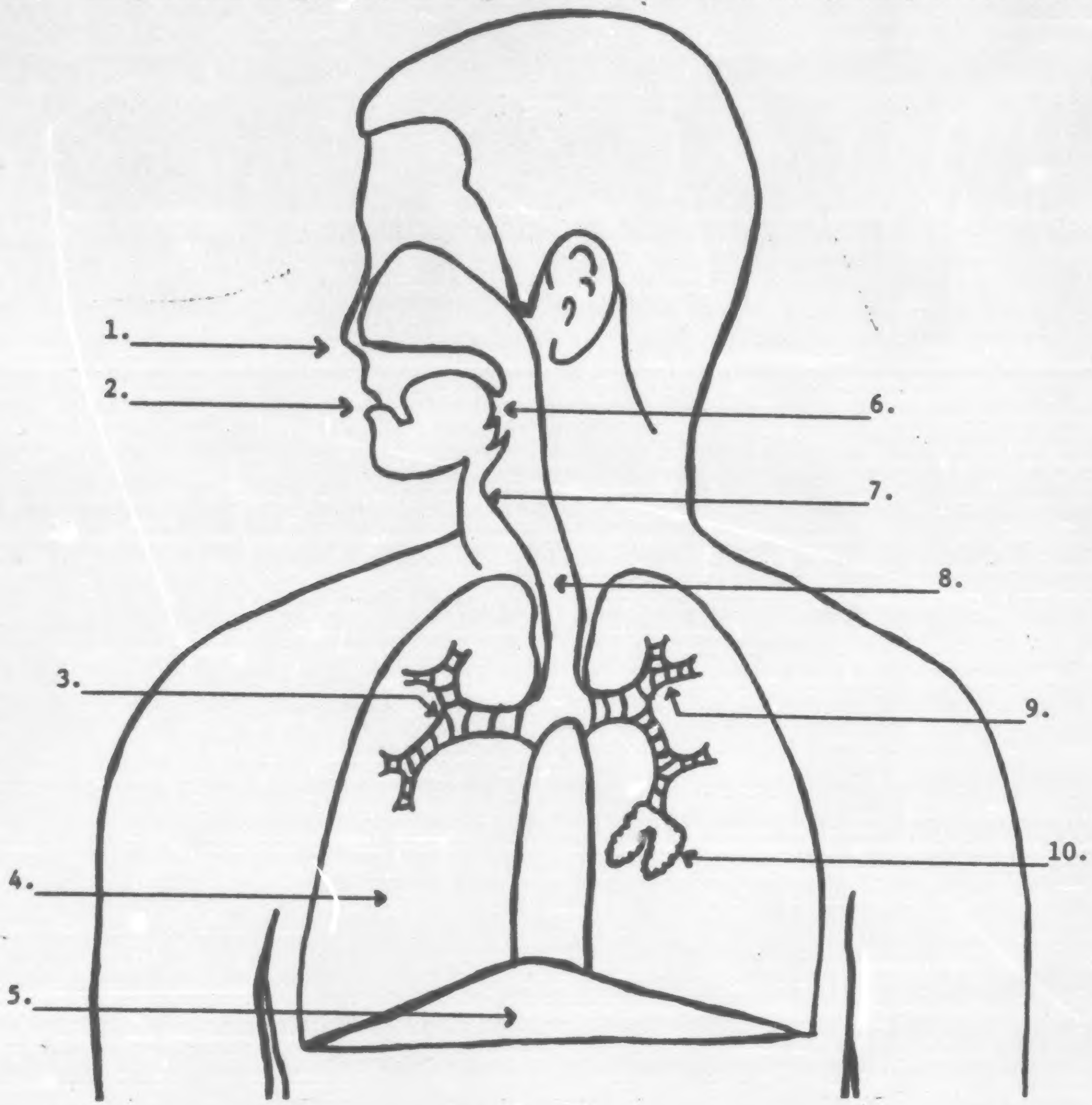
    b. ______________________________

    c. ______________________________

    d. ______________________________

LEARNING ACTIVITIES - continued

22. Complete the diagram by writing the correct words in the spaces provided below.



1. ______________________

2. ______________________

3. ______________________

4. ______________________

5. ______________________

6. ______________________

7. ______________________

8. ______________________

9. ______________________

10. ______________________

LEARNING ACTIVITIES - continued

ACTIVITY #2. Respiratory System Terminology Exercise

Directions: Using Taber's Cyclopedic Medical Dictionary or any other resource book available, look up the meanings for the followng words and write them in the spaces provided.

1. Apnea: ____________________
2. Asphyxia: ____________________
3. Carina: ____________________
4. Cheyne-Stokes respiration: ____________________
5. Cyanosis: ____________________
6. Dyspnea: ____________________
7. Epistaxis: ____________________
8. Hemoptysis: ____________________
9. Homeostasis: ____________________
10. Hypoxia: ____________________
11. Infarct: ____________________
12. Laryngitis: ____________________
13. Necrotic: ____________________
14. Orthopnea: ____________________
15. Pleural effusion: ____________________
16. Pneumonectomy: ____________________
17. Pulmonary embolism: ____________________
18. Residual volume: ____________________
19. Respiratory acidosis: ____________________
20. Sinusitis: ____________________
21. Spirometer: ____________________
22. Tidal volume: ____________________
23. Thoracotomy: ____________________

LEARNING ACTIVITIES - continued

24. Tonsillitis: ____

25. Vital capacity: ______________________________________

ACTIVITY #3. Pressure in the Lungs and Arterial Blood Gases

Directions: Read the following.

Pressure in the Lung

Positive and negative pressures are often mentioned when studying the anatomy and physiology of the thoracic cavity. You have already learned that the pleura membranes are attached to the thoracic wall and the diaphragm (parietal pleura) and to the lungs (visceral pleura). This makes the cavity airtight.

When the thoracic cavity becomes larger due to the contraction of the diaphragm and the intercostal muscles during inspiration, we say that the lungs have a negative pressure because it is less than atmospheric pressure (pressure in the outside air). This negative pressure is caused when the lungs expand but the amount of air inside the lungs does not expand. When we breathe, air is dragged into our nose or into our mouth and down into the alveoli. This air in our lungs causes the pressure to become greater than atmospheric pressure and air is then forced out of the lungs again to equalize the pressure.

The cavity must remain airtight. If a chest wound should penetrate the parietal pleura, air would be sucked into the cavity equalizing the pressure within the cavity with the outside air. Once the cavity reached atmospheric pressure, the lung would remain collapsed because there would be no negative pressure to drag air into the lungs.

If you do not fully understand this, PLEASE see your instructor.

Arterial Blood Gases (ABG)

Frequently a patient with respiratory distress or questionable respiratory distress will have arterial blood gases drawn to determine the oxygen and the carbon dioxide pressure within the oxygenated blood. The symbol $p0_2$ refers to the carbon dioxide in arterial blood.

The $p0_2$ in the arteries should be within the range of 100 mm Hg and the $pC0_2$ in the arteries should be within the range of 40 mm Hg. If the $p0_2$ is decreased and the $pC0_2$ increased, there is some part of one of the lungs that is not able to transfer oxygen to the blood.

The blood that is full of carbon dioxide reaches this part of the lung and expects to receive oxygen. However, it receives none. It, therefore, is joined with oxygenated blood and sent through the pulmonary veins to the left side of the heart and to the general circulation. This blood is the cause of the decreased $p0_2$ and increased $pC0_2$ in the arteries.

LEARNING ACTIVITIES - continued

Arterial blood gases are drawn to determine lung function, lung adequacy and tissue perfusion. They are extremely useful guides to what is going on inside the acutely ill patient. The normal electrolyes and acid base studies are presented below for your information.

Normal Electrolytes - Acid Base Studies
Electrolyte Panel & Arterial Blood Gases

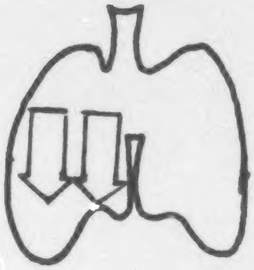
PH	7.35 - 7.45	Normal blood is slightly alkaline
$PC0_2$	30 - 45	Carbon dioxide
$P0_2$	85 - 95	Oxygen
$HC0_3$	24 - 28	Bicarbonate
BE	3 to +3	Base excess
0_2 CT	20 + 2 ml/dl	Oxygen content
0_2 SAT	92% or Arterial	Oxygen saturation
Sodium	138 - 148	Electrolytes
Potassium	4.1 - 6.1	
Chloride	98 - 108	
Osmolality (Serum)	275 - 296	

When blood gases are drawn, a heparinized syringe is used to keep the blood unclotted. It is sent immediately to the lab for analysis. The physician, critical care RN or specially trained lab technician can obtain a specimen from the jugular, radial or femerol artery.

LEARNING ACTIVITIES - continued

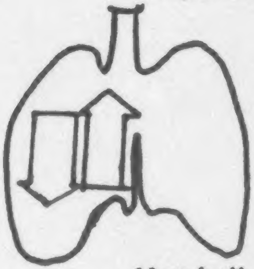
Examples of types of pulmonary - blood gas relationships are illustrated in the diagrams below.

Metabolic acidosis



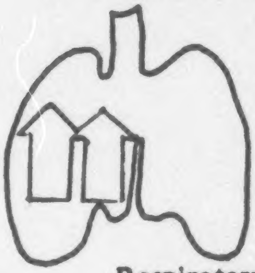
Hyperventilation.
Lungs attempt to compensate for low pH by unloading more CO_2.

Respiratory acidosis



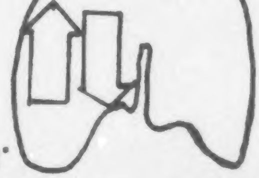
Interference with gas exchange in lungs causes CO_2 retention.
As CO_2 accumulates, pH is forced downward.

Metabolic alkalosis



Lungs attempt to compensate for high pH by retaining more CO_2.

Respiratory alkalosis



Hyperventilation.
Excessive loss of CO_2.

Your nursing responsibility includes checking the normal values of pO_2 on the lab slip before determining if either is raised or lowered. Pressure normals may vary between hospitals. Be certain to check your hospital laboratory manual. Also if blood gases are drawn from an artery you may be asked to apply pressure over the site to stop bleeding. This pressure should be held no less than five minutes.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Diagnostic Procedures Performed to Confirm Respiratory Disorders

Directions: Study the following.

Chest X-Ray

X-ray examination of the chest is one of the most common of all x-ray procedures. It is ordered by the physician to detect disease of the chest or to follow the progress of disease process. A small microfilm is used most often. If any abnormal condition is detected, a large film is taken. Many hospitals require routine chest x-ray films of all patients admitted. When chest x-ray films have been ordered for a hospitalized patient, the nurse should see that the patient wears a hospital gown tied in the back.

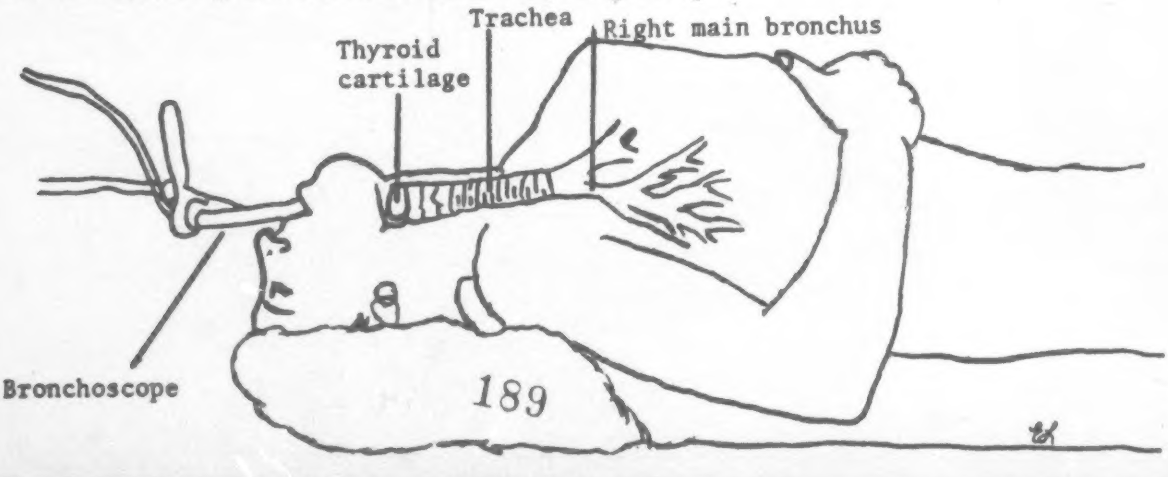
Pins and bras with metal hooks and any other article of clothing containing metal must be removed because the presence of metal will produce a shadow over the film. Patients are transported to the x-ray department by stretcher or wheelchair and should be accompanied by an attendant. If the patient is too ill to be taken to the x-ray department, a portable x-ray machine may be taken to the patient's bedside; however, the preparation of the patient is the same. If the patient is receiving oxygen, it must be turned off during the x-ray examination.

Bronchoscopy

A bronchoscopy is a diagnostic procedure performed to visualize (see) the mucus membranes of the bronchus by looking through a lighted tube called a bronchoscope. (Study the diagram below showing how a bronchoscope is inserted.)

This procedure may be performed to:

1. Remove a foreign body that is blocking the airway.
2. Visualize any lesions that may be present on the mucous lining.
3. Visualize any tumors or growths.
4. Take a biopsy of tissue that may appear irregular.
5. Remove deep secretions for laboratory diagnosing.



LEARNING ACTIVITIES - continued

Preparation, Procedure and Postprocedure

1. Preparation

    a. Explain the procedure to the patient.

    b. Permit must be signed.

    c. NPO for 8 to 12 hours or after midnight.

    d. Preop medication or a sedative may be ordered.

2. Procedure done by physician

    a. Patient is taken to the operating room or a special procedure room (sterile technique is essential).

    b. Local anesthetic is sprayed on the pharynx to depress the gag reflex.

    c. Patient must keep shoulders as relaxed as possible and breathe through the nose not the mouth.

    d. A fibroscope is passed through the mouth into the bronchi.

3. Postprocedure

    a. Patient is returned directly to a room.

    b. NPO until the gag reflex returns, usually one hour to prevent the possibility of aspiration.

    c. Warm fluids and warm saline gargles help to relieve symptoms of a sore throat.

    d. Observe for severe sore throat, hoarse voice, excessive blood in the sputum and respiratory distress. Report your observations to the nurse in charge.

Bronchograms

Bronchograms allow for the visualization of the bronchial trees by the use of x-rays.

Preparation, Procedure and Postprocedure

1. Preparation

    a. Steps one through four are the same as for a bronchoscopy.

    b. Posteral drainage may be ordered to rid the bronchioles of secretion so that the dye can be readily seen.

LEARNING ACTIVITIES - continued

2. Procedure done by the physician
    a. Local anesthetic is sprayed on the pharynx.
    b. In some cases a metal cannula is passed through the mouth into the trachea. In other cases a fibroscope is passed.
    c. A catheter is passed through the cannula into the trachea and a radiopaque liquid is injected into the bronchi and bronchioles.
    d. The examining table is tilted in various positions to enable the dye to be distributed to all the bronchioles.
    e. X-rays are taken.
3. Postprocedure
    a. Postural drainage is immediately ordered to remove the radiopaque liquid (no harm will come if it is not all removed).
    b. NPO until the gag reflex returns. This can best be tested by tickling the back of the throat with a cotton swab.

Gastric Washings

Because most people swallow rather than expectorate sputum, it is often necessary to remove the stomach contents in the early a.m. in order to obtain a specimen that contains the respiratory secretions needed for a culture. This diagnostic procedure is called gastric washing.

Preparation, Procedure and Postprocedure

1. Preparation
    a. Explain the procedure to the patient.
    b. NPO after midnight.
2. Procedure done by the registered nurse
    a. Insert a nasal gastric tube into the stomach in the early a.m. (0700-0800).
    b. With a 50 cc syringe, slowly remove the stomach contents.
    c. Place specimen in a sterile container.
    d. Label the container correctly and send the specimen to the lab.

LEARNING ACTIVITIES - continued

Thoracentesis

This procedure is performed to remove fluid or air from the pleural cavity to facilitate the lung in expanding to its normal size or to culture the fluid for the cause of an infection. The fluid is removed by inserting a needle into the pleural cavity.

Preparation, Procedure, and Postprocedure

1. Preparation
   a. Explain the procedure to the patient.
   b. A permit may need to be signed (check your hospital manual).
   c. If the procedure is performed posteriorly, have the patient sit in bed or on the side of the bed and lean over the bedside table. Place one or two pillows on top of the bedside table. Or, the patient may straddle a chair and place his/her arms on the back of the chair.
   d. If the procedure is performed anteriorly, have the bed raised to a Fowler's position and have one or two pillows under the patient's arms for support.
2. Procedure done by the physician
   a. The skin is swabbed with a disinfectant.
   b. The intercostal space is anesthetized with a local anesthetic.
   c. The patient must be instructed not to move or cough and not to deep breathe once the doctor begins to inject the thoracentesis needle!! (A MUST because a sudden move could cause the needle to advance too far and cause trauma to the lungs.)
   d. The thoracentesis needle is injected slowly into the pleural cavity and the fluid or air is removed.
3. Postprocedure
   a. Immediately after the needle is withdrawn, apply pressure to the area by applying a sterile 2x2.
   b. Observe for blood-tinged frothy mucous, uncontrollable coughing, chest pain and shock. (Be sure that the patient did not experience any of these signs before the procedure.) Report any observations to your team leader.

LEARNING ACTIVITIES - continued

Review Exercises

Directions: Answer the following review questions by filling in the blanks.

1. The visualization of the mucous membrane of the bronchus is made possible when a patient has a(n) ______________________________ .

2. Reasons for performing the procedure from question #1 include:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

3. A local anesthetic is sprayed on the throat in diagnostic procedures to ________ ______________________ .

4. During the procedure in question #1, the patient must breathe through his/her ______________ .

5. Observations made after the procedure in question #1 include:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

6. A bronchogram is a(n) ______________________________

7. A catheter is passed into the trachea so that ______________________ .

8. The patient is kept NPO after a bronchogram until ______________________ .

9. The purpose for a gastric washing is to ______________________ .

10. The stomach contents are removed with a(n) ______________________ .

11. During a thoracentesis, ______________ or ______________ is removed from the pleural cavity.

12. The patient should remain as still as possible during the thoracentesis procedure because ______________________________ .

LEARNING ACTIVITIES - continued

13. After a thoracentesis, you should observe for:

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

14. List three things determined by an ABG.

a. ______________________________

b. ______________________________

c. ______________________________

15. As an LPN, your responsibilities in caring for a patient who has had blood gases drawn would be:

a. ______________________________

b. ______________________________

c. ______________________________

ACTIVITY #5. Chronic Obstructive Pulmonary Diseases

Directions: Read the following.

Chronic obstructive pulmonary diseases (COPD) are diseases that interfere with the air flow and include emphysema, chronic bronchitis and asthma. The severity of respiratory impairment depends totally on the extent of the disease. The more respiratory obstruction the patient experiences, the more likely the patient is to develop fear, tension, frustration and feelings of panic. Patients with COPD require a great deal of support from the nurse. Remember, as the disease progresses and the shortness of breath increases, the patient's activity level will have to decrease even to the point that the patient will have to quit his or her job. This kind of restriction on the patient's lifestyle can create a feeling of social isolation and depression. Many body systems are affected by COPD. Cardiac complications, electrolyte balance and extracellular fluid homeostasis are all affected by COPD.

General Nursing Management for Patients with COPD should include:

a. Preventing respiratory infections.

2. Encouraging patients to secure influenza vaccine in early fall.

3. Encouraging patients to discontinue cigarette smoking.

4. Avoiding drafts and sudden temperature changes.

LEARNING ACTIVITIES - continued

5. Helping patients expectorate secretions with:
    a. Postual drainage
    b. Coughing
    c. Expectorants
    d. Bronchodilators
    e. High humidity
6. Teaching breathing exercises, "pursed lip" breathing.
7. Administering oxygen only if ordered and in low concentrations (flow rate, 1 to 2 liters per minute).
8. Observing for complications such as congestive heart failure.
9. Encouraging daily exercise program to recondition and strengthen muscles.
10. Encouraging nourishing diet with several small meals a day.
11. Encouraging fluid intake.
12. Encouraging self-care activities within limits of patient's ability.

Acute Bronchitis

As the name suggests, bronchitis is an inflammation of the bronchi. The inflammation may progress to include the trachea (tracheabronchitis). Bronchitis is usually caused by an upper-respiratory infection that is already present or by inhaled chemicals, smoke or air pollution. If the cause is an upper-respiratory infection, precautions must be made to protect others from contacting the disease.

Signs and Symptoms

Bronchitis generally affects the whole body. The symptoms are usually very general, such as chills, fever, malaise and headache. Most specfic symptoms are a dry, irritating cough with little or no sputum production and soreness in the chest from coughing. As the disease progresses, more sputum is produced. This increase in sputum helps to lubricate the bronchi and decreases the scratchy, irritating feeling in the throat.

Nursing Care

Here are some things we can do for a person with acute bronchitis. Study the care plan on the following page.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Dry, irritating cough	Increase the humidity in the room.	Moistens and lubricates the throat to decrease irritation.
	Give warm fluids to drink.	Soothes sore throat, decreases irritation.
	Force fluids.	Liquifies secretions so that the cough will be more productive.
Chest pain	Apply moist heat to chest with doctor's order.	Relieves sore muscles from coughing.
	Splint chest with hand, towel or sheet.	Helps to reduce the discomfort from sore muscles.
Tired and rundown from coughing	Provide periods of rest.	Prevents any recurrence of the symptoms.
	Keep the patient warm.	
	Encourage the patient to be completely over any symptoms before engaging in any activities that cause overexertion.	

Treatment

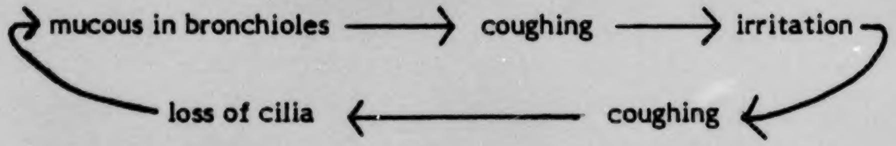
Never give a person with acute bronchitis any medication that may depress coughing. You want the patient to cough up the mucous, not to keep it in the lungs where it becomes a good media for bacteria growth.

This disease can often be prevented by simply seeking medical help when you have a respiratory infection. Seeing a physician when symptoms of upper respiratory tract infections are present not only helps to prevent bronchitis, but also helps to prevent such diseases as rheumatic heart diseases and endocarditis.

Chronic Bronchitis

Chronic bronchitis is usually seen in individuals over 40 years of age who are either heavy smokers or engaged in a job where they are exposed to harmful fumes. The irritant (smoke or fumes) causes the bronchiole membrane to secrete an excessive amount of mucous. The person coughs to rid the bronchioles of the mucous. This cough causes more irritation, which in turn causes more coughing. The more the person coughs or tries to expectorate the mucous, the more cilia he/she loses in the respiratory system and the harder the person must cough to expectorate. It is a snowball effect.

LEARNING ACTIVITIES - continued



Treatment

Not much can be done to cure chronic bronchitis. Removing the irritant may decrease some of the symptoms but frequently the bronchioles have been obstructed and the alveoli are already irreversibly damaged. Thus, treatment of this disease is directed toward preventing any further damage to the lungs rather than curing the disease itself.

Nursing Care

Nursing care includes both the approaches listed under acute bronchitis and those listed under emphysema, which is discussed in the next section. If the patient is a smoker, he/she should also be encouraged to cut down on smoking or quit smoking altogether.

Pulmonary Emphysema

As with chronic bronchitis, emphysema causes anatomical changes in the bronchioles and alveoli of the lungs. The bronchioles and the small air passages of the lungs become dilated because of the changes in their walls due to chronic infections and chronic obstructions with mucous plugs. This in turn causes the alveoli to remain in the expanded position. This is where the problem really lies. If the alveoli do not contract, allowing the already present air with a high carbon-dioxide concentration to be expirated, the fresh air cannot enter the alveoli and cause them to expand. There can be no carbon dioxide and oxygen exchange in the blood. Therefore, the chronic hyperextention state of the alveoli and bronchioles not only causes respiratory difficulty but circulatory difficulty as well.

Since the lungs are always in an expanded state, the chest resembles a barrel with the shoulders elevated. The patient has to consciously think about inhaling so he/she appears to be dyspneic most of the time, especially when engaging in even simple activities such as tying shoelaces. Along with the difficulty in expirating comes a wheezing sound as the patient tries to force the air out of his/her lungs. Do not give a large concentration of O_2. You may give up to 4 liters/min if ordered by the physician.

Because the blood is not being oxidized adequately, the patient appears cyanotic, lethargic and drowsy most of the time. This in turn, makes breathing more difficult because it takes so much energy to breathe and the patient just does not have any excessive amounts of energy.

LEARNING ACTIVITIES - continued

Complications

Once you understand the changes that occur, you need to become familiar with the complications that can affect a patient with pulmonary emphysema.

1. Respiratory infections. If the patient cannot adequately exhale the air, he/she will certainly have difficulty coughing up sputum. The more the patient tries to cough, the more the sections are produced and retained. Therefore, the perfect media for bacterial growth are present, increasing the likelihood of the patient's developing an upper-respiratory infection.
2. Right-sided heart failure. As the alveoli remain in an expanded condition, they begin to break down along with the capillaries associated with them. This causes an increase of blood in the pulmonary arteries and more effort is needed by the right ventricle to push the blood through the pulmonary arteries. The right ventricle will eventually become tired and begin dysfunctioning.

Below and on the following page a brief care plan lists only three of the many problems facing an emphysemic patient. At the end of the care plan, add at least three other problems a patient may have and at least two nursing approaches and two rationales for each problem.

First, read the following:

Patient Problem	Nursing Approach	Rationale
Difficulty in breathing.	Place in a straight, highbacked chair or in Fowler's position or in position of choice.	Internal organs cannot press on the diaphragm and inhaling will be easier.
	Have patient lean forward when exhaling.	Internal organs will press on diaphragm and facilitate exhaling.
	Encourage patient to inhale through his/her nose.	This will warm and moisten air.
	Encourage the patient to exhale through his/her mouth with teeth clenched.	Less resistance of air; patient can control length of expiration better.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
(continued)	Suggest breathing exercises such as: (a) blowing on a candle flame, but not blowing it out. (b) supporting abdomen with a pillow and applying pressure when exhaling. (c) blowing into bottles q 2 hrs. (d) using the incentive spirometer q 2 hrs.	The exercises should help to strengthen accessory muscles so that breathing between times is easier.
Weak and lethargic	Plan a.m. care for midmorning.	Early in the a.m. patient is weak from coughing up secretions that have collected during the night.
	Schedule breathing treatments and exercises before meals.	Clear the lungs well before meals because eating is tiring.
	Place limit on lengthy conversations.	Talking requires more air exchange than the patient can produce.
Poor nutrition	Mouth care before each meal.	To remove the unpleasant taste of the respiratory secretions so the food will taste better and the patient will eat more.
	Between meal snacks. Small frequent feedings.	Patient is usually too tired to eat much at one time.
	Force fluids.	To keep a check on dehydration and to help liquify secretions.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale

ACTIVITY #6. Bronchiectasis

Directions: Read the following.

Bronchiectasis is the dilitation or "pouching out" of the bronchi or bronchus. It is usually caused by a chronic infection or congenital weakness.

Signs and Symptoms

The symptoms of bronchiectasis usually include severe chronic paroxysmal cough and the expectoration of much foul-smelling and sometimes blood-tinged phlegm. The constant cough makes the patient weak and fatigued most of time. Anorexia develops because of the unpleasant taste and the patient tends to lose weight. Therefore, repeated oral care is essential.

LEARNING ACTIVITIES - continued

Physician's orders may include:

1. Postural drainage at least bid to try to remove the sputum.
2. Antibiotics to help cure the respiratory infection and to prevent another infection.
3. Occasional prophylactic antibiotics.

If, as happens in many cases, the bronchi develop sac-like projections that are constantly filled with pus, the only cure is to surgically remove the lung or part of the lung. (Care for a patient with lung surgery will be discussed in Activity 17.)

Asthma

Signs and Symptoms

The characteristic symptoms of asthma are shortness of breath accompanied by wheezing and coughing. The process of exhaling is more difficult than inhaling. The patient should sit up with his/her head tilted forward during exhalation and expell as much air as possible. As a result of the ventilation difficulty the patient may become cyanotic and, in prolonged attacks, asphyxiation and death may occur. Other symptoms include profuse perspiration, weak pulse and pain in the chest caused by the respiratory effort.

Treatment

Treatment of asthma is directed toward three factors:

1. Relief of the immediate attack
2. Control of causal factors (allergies or other physical factors)
3. General care of the patient

Adults may be given epinephrine subcutaneously or IM. Other drugs include ephedrine and aminophylline. Many ambulatory patients benefit from nebulizers with isoproterenol or a similar drug.

Nursing Care

Patients with asthma should be advised against smoking and should avoid exposure to cold wet weather. A program of personal hygiene with sleep, rest and breathing exercises should be started. During an acute attack the nurse should place the patient in a sitting position and make the patient as comfortable as possible. A vaporizer helps loosen secretions and the patient should be encouraged to take an adequate amount of fluids.

Severe attacks of asthma are frightening to all concerned and the patient needs reassurance and support. The nurse should understand that asthma in itself is rarely serious and should maintain a calm attitude while caring for the patient.

LEARNING ACTIVITIES - continued

ACTIVITY #7. Review Exercise

Directions: Answer the following questions by filling in the blanks.

1. Bronchitis is caused by:

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. While there is no sputum production in bronchitis, the patient will experience:

   a. ______________________________

   b. ______________________________

3. A dry cough can be soothed by:

   a. ______________________________

   b. ______________________________

4. Prevention of bronchitis includes:

   a. ______________________________

   b. ______________________________

   c. ______________________________

5. Anatomical changes in the alveoli of the emphysemic patient are:

   ____

6. The bronchioles are also affected because they become ________________ .

   ____

7. The barrel chest in emphysema is due to the ______________________ .

LEARNING ACTIVITIES - continued

8. Symptoms of emphysema include:

   a. ______________________

   b. ______________________

   c. ______________________

   d. ______________________

   e. ______________________

   f. ______________________

   g. ______________________

   h. ______________________

9. Severe complications of emphysema include:

   a. ______________________

   b. ______________________

10. The three main problems of a patient with emphysema are:

    a. ______________________

    b. ______________________

    c. ______________________

11. Take any one problem for a patient with emphysema and include two nursing approaches and two rationales not mentioned in this module.

Patient Problem	Nursing Approach	Rationale
1.		
2.		

LEARNING ACTIVITIES - continued

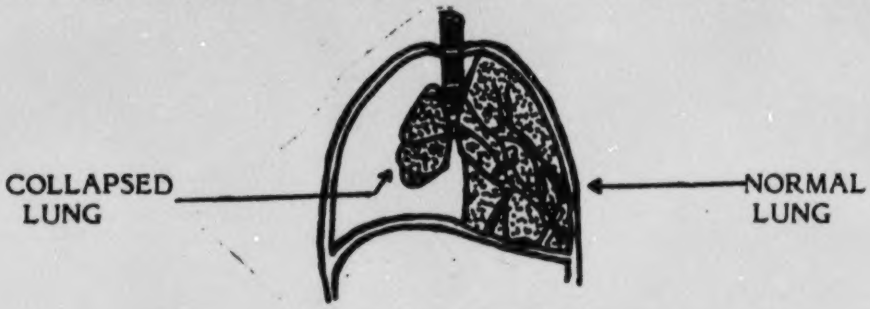
12. Bronchiectasis is ______________________________ .

13. Bronchiectasis can only be cured with ________________________ .

ACTIVITY #8. Pneumothorax

Directions: Read the following.

When air seeps into the pleural cavity causing the lung to collapse, the patient is said to have a pneumothorax. The cause of this condition can either be interior, such as a ruptured emphysematous bleb or a breakdown in the alveoli and pleura from a chronic lung disease, or external, such as a penetrating chest wound or a broken rib piercing the membrane. A condition with no known cause called "spontaneous pneumothorax" occurs frequently in young adults. Whatever type of pneumothorax the patient experiences, the results are the same. Air leaks into the pleural cavity and eliminates the negative pressure on the affected side causing the lung to collapse.



PNEUMOTHORAX

Signs and Symptoms

A pneumothorax is a very frightening experience. The first symptom is a sudden severe chest pain on the affected side. Then the patient becomes dyspneic and anxious. When the patient begins to perspire, the pulse becomes weak and rapid and blood pressure is lowered. Naturally, there is no expansion of the affected lung so the chest does not move on the affected side during inhaling or exhaling. The skin color of the patient is usually pale at first and then cyanotic.

Treatment and Nursing Care

The first concerns when caring for a patient immediately after a pneumothorax has occurred are to stay with the patient, keep him/her calm and keep the patient from being overexerted. This will make breathing easier and prevent the patient from gasping for breath. If this does not help and the patient continues to be in respiratory distress, oxygen should be started at once.

LEARNING ACTIVITIES - continued

An important nursing action is to decrease anxiety and apprehension in order to relax the breathing pattern until a physician is reached.

After chest x-rays are taken to determine the amount of air in the cavity, a thoracentesis will probably be performed by the physician to remove the air. If air continues to leak into the cavity, chest tubes will be inserted and connected to a closed drainage system to constantly remove the air.

If a thoracentesis is performed, the nursing observations should include:

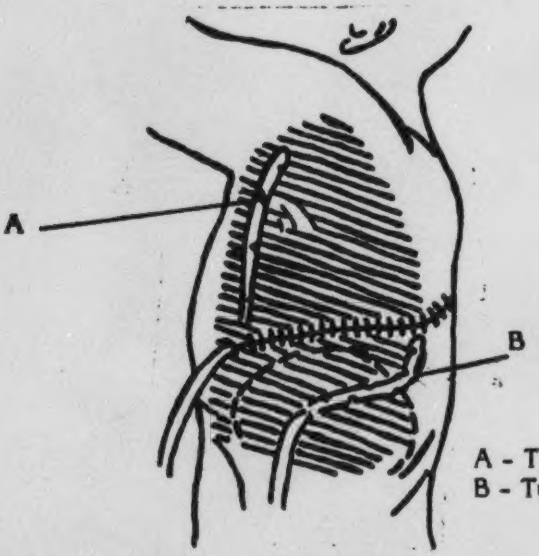
1. Breathing pattern and chest expansion on affected side.
2. Vital signs at least q4h to check that the pulse is no longer rapid and blood pressure is decreased.
3. Skin color
4. Anxiety level

ACTIVITY #9. Chest Tubes

Directions: Read the following.

Chest tubes are inserted after chest surgery or trauma to the chest area in order to remove air or fluid from the intrapleural space. By inserting chest tubes, negative pressure is obtained and a collapsed lung is able to respond or fluid is removed so that the lung will not collapse.

If air is being removed, the chest tubes or catheters are placed near the apex of the lung since air rises. If fluid is being removed, the catheters are placed near the base of the lung since fluid tends to settle toward the bottom of the lung.



A - Tube removes air
B - Tube removes fluid

LEARNING ACTIVITIES - continued

The chest tubes can either be connected to gravity drainage or to a suction machine. The usual procedure is to connect them to a suction machine with very little suction, or negative pressure, so that there will not be trauma to the pleura or to the lung.

Setting up the suction apparatus and discussing the amount of water in each container will not be covered here. This type of information can be obtained in any hospital procedure manual or from Central Supply when the pleuro-vac is issued to a patient. What we are most concerned about at this time is the nursing approach used and the observations that need to be made whenever you are caring for a patient with chest tubes.

Read the nursing approach on this page. Remember, if you have any questions be sure to ask your instructor.

Nursing Approach	Rationale
1. Check the suction machine to see that it is operating at the desired pressure.	1. Could decrease the amount of pressure ordered or cause a backup of fluids or air.
2. Check to see that all tubes are connected and that there is no air leak in the system.	2. Could decrease the amount of pressure ordered or cause a backup of fluids or air.
3. Check for kinks in the tube.	3. Suction would be cut off completely and produce back pressure, slowing drainage down.
4. Check for the amount and describe the color and the consistency of the drainage.	4. Provides a way to detect hemorrhage and infection.
5. Monitor patient's pulse, blood pressure and respirations frequently.	5. Provides a way to observe early signs of hemorrhage or respiratory difficulty.
6. Milk the tubing away from the chest at least q4h. (Pinch tubing with fingers, pull down toward the length of tube being careful not to dislodge its position.) May be helpful to put powder on your fingers so they will slide along tube as you pinch and milk.	6. To maintain the tube's patency.

LEARNING ACTIVITIES - continued

Nursing Approach	Rationale
7. Always have extra clamps at the bedside.	7. In case tubes become disconnected from suction, they need to be clamped near chest to prevent air from entering the lungs.
8. Coil extra tubing and secure it to the bed linen with large clamps. The tubing should not loop or interfere with the patient's movements.	8. To prevent people from tripping over tubing or accidentally pulling the tubes out or apart.
9. Always have drainage bottles below chest level.	9. To prevent air or fluid from backing up into the intrapleura space.
10. Always use sterile technique if the drainage bottle needs to be changed. (Follow the procedure in your hospital procedure manual.)	10. To prevent bacteria from backing up into the intrapleura space.
11. At the end of each shift (or as ordered) mark the drainage bottle at the level of drainage with the date and the time.	11. This is the best way to keep an adequate record of the drainage per shift.
12. Observe and report immediately signs of rapid, shallow breathing, cyanosis, pressure in the chest, subcutaneous emphysema or symptoms of hemorrhage.	12. Surgical intervention may be necessary.

Remember, if for any reason a drainage or a suction bottle should break or the tubing should come disconnected, if ordered by the physician, take a large clamp and clamp the chest tube as close to the patient's body as possible. If a chest tube should be pulled out of the chest cavity, apply a sterile 2x2 or a 4x4 over the opening immediately while a fellow co-worker calls the physician.

If you understand the importance of maintaining a closed drainage system and keeping the drainage bottle below the chest cavity, there is nothing difficult about caring for patients with chest tubes. The basic care has been outlined here, but it is suggested that you read the material again and then ask your instructor for any further information or clarification.

LEARNING ACTIVITIES - continued

ACTIVITY #10. Pneumonia (hypostatic, viral, bacterial)

Directions: Read the following material.

Pneumonia is a disease of the lungs and, more specifically, the alveoli. Due to the inflammatory process that accompanies an infection, the alveoli become engorged with fluid because of the patient's inability to cough up sputum (example: comatose, weak, elderly and/or alcoholic patients). The patient may have the inflammation or fluid in the alveoli first. This is a perfect media for bacterial or viral growth, thus, pneumonia is a secondary disease. See the picture below on bacterial and viral pneumonia.

Signs and Symptoms

Signs and symptoms of pneumonia must not be avoided or shrugged off as unimportant. They include:

1. Chest pain.

2. Fever of 104° to 106° F. (40 to 41.1C).

3. Coughing with expectoration of thick, maybe purulent, sputum.

4. Rapid pulse and respirations.

Because of these symptoms, the patient loses sleep, becomes restless, is easily irritated and depressed.

The physician's orders may include:

1. Antibiotics (if bacterial pneumonia).

2. IV fluids to keep the patient hydrated, to liquify secretions and to administer antibiotics.

3. Oxygen tent to relieve patient's need to gasp for breath and, in turn, relieve chest pain and help relax the patient.

4. Medication to relieve chest pain and discomfort. However, a cough suppressant is not given if the patient is expectorating any sputum at all.

LEARNING ACTIVITIES - continued

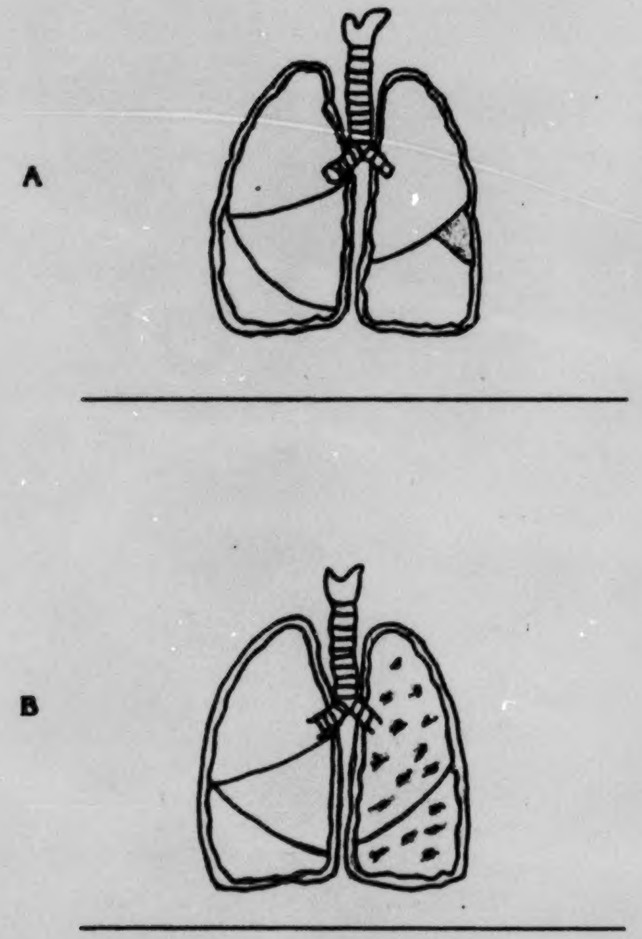


Fig. A. Bacterial pneumonia may affect one or more lobes of the lung. B. Viral pneumonia appears as a patchy distribution throughout the lung.

LEARNING ACTIVITIES - continued

Nursing Care

By now you should be familiar with some of the nursing care for a patient with the symptoms of pneumonia. Complete the care plan below by writing in the nursing approach and rationale for the given patient problems. Discuss your answers with your instructor.

Patient Problems	Nursing Approach	Rationale
1. Dyspnea		
2. Fever		
3. General malaise		

LEARNING ACTIVITIES - continued

ACTIVITY #11. Diseases of the Pleural Cavity

Directions: Read the following.

Pleurisy is an inflammation of the pleural membranes (pleura). If there is little or no fluid between the membranes, there is friction and pain upon breathing. The following conditions are types of pleurisy and complications of pneumonia or tuberculosis.

Pleural effusion is also an inflammation of the pleural membranes. In this disease, however, an excess amount of fluid is being produced and collected between the membranes.

Empyema is a condition in which pus collects in the pleural cavity.

All three diseases are related to the pleura and to the pleural cavity. To help you to distinguish between the three, study the following chart.

	Pleurisy	Pleural Effusion	Empyema
Cause:	Secondary result of pneumonia, TB or chest trauma.	Secondary result of respiratory infections.	Secondary result of pneumonia, TB or chest trauma.
Physical Changes:	Dry, inflamed pleura rub together.	Fluid between the pleura can be either clear, bloody or straw-colored.	Pus between the pleura.
Signs and Symptoms:	Shortness of breath. Fever. Malaise. Cough. Stabbing chest pain on affected side. Headache.	Shortness of breath. Fever. Malaise. Dry cough. Affected side does not move with respirations. Weight and energy loss.	Shortness of breath. Fever. Malaise. Cough. Unilateral chest pain. Orthopnea.
Diagnostic Tests:	Chest x-ray. Sputum culture.	Chest x-ray. Culture of fluid after a thoracentesis.	Chest x-ray. Culture of fluid after a thoracentesis.

LEARNING ACTIVITIES - continued

As you can tell, many of the symptoms are the same and only lab tests or x-rays will distinguish which disease is present.

Physician's orders for all the diseases may include:

1. Antibiotic therapy.
2. Analgesics.
3. Antipyretics.
4. Forced fluids.
5. Vital signs q4h.
6. Oxygen therapy.
7. Diet high in protein, calories, vitamins and minerals with supplemental feedings.

Nursing Care

The nursing approach for all three diseases is similar to caring for a patient with pneumonia but listed below are some special problems for patients with pleurisy.

Patient Problem	Nursing Approach	Rationale
1. Unilateral chest pain.	Have patient lie on affected side.	Helps to splint the area.
2. Spread of infection to other parts of lungs.	Have patient lie on affected side. Give antibiotic as ordered.	So gravity will not pull fluid or bacteria to the other side.

ACTIVITY #12. Atelectasis

Directions: Read the following.

Atelectasis, the collapsing of a lung, was discussed briefly in the previous activity on pneumothorax; however, there are causes for a collapsed lung other than the presence of air in the pleural cavity. A second cause could be fluid in the pleural cavity (which could be removed by a thoracentesis or chest tubes). A third cause could be an obstruction of the bronchioles prohibiting air from filling up the lung. The obstruction usually is caused by thick bronchiole secretions that form a plug or by inhaling a foreign substance or body such as aspirating a piece of carrot. The patient should be encouraged to cough and to turn from side to side to try to loosen the obstruction. If this proves fruitless, the patient will have to have a bronchoscopy done by a physician and the obstruction removed.

LEARNING ACTIVITIES - continued

Whatever the cause, the lung should be reinflated as rapidly as possible to prevent other complications such as pneumonia or a lung abscess.

Atelectasis can be prevented by insisting that postop or sedated patients turn, cough and deep breathe frequently. If your patient is comatose or too drowsy to turn, to cough and to deep breathe, an order by the physician for nasopharyngeal suction will not only help remove secretions but also stimulate even the drowsiest patient to cough. We must always try to prevent fluid from collecting around the lung or in the lung. The best way to do this is to keep the patient active.

ACTIVITY #13. Review Exercise

Directions: Answer the following questions by filling in the blanks. Answers can be found by reviewing Activities 9 - 12.

1. Chest tubes are inserted to ______________________________ .
2. Chest tubes are connected to ______________ or ______________.
3. You should always check chest tube equipment for:
   a. ______________________________
   b. ______________________________
   c. ______________________________
4. Chest tubes should be milked to ______________________________ .
5. To prevent fluid or air backup, always place the chest tube drainage bottles ____________________.
6. If a chest tube drainage bottle should break, your immediate action should be to ____________________.
7. People most susceptible to pneumonia are:
   a. ____________________
   b. ____________________
   c. ____________________
8. Symptoms of pneumonia are:
   a. ______________________________
   b. ______________________________
   c. ______________________________

LEARNING ACTIVITIES - continued

9. The patient with pneumonia is usually on oxygen because ____________________

____

10. A cough suppressant is usually not ordered for a patient with pneumonia because

____

11. Pleurisy is a condition characterized by __________________ pleura causing severe pain.

12. Orthopnea is a sign of ____.

13. Ways to alleviate chest pain include:

    a. ____

    b. ____

    c. ____

14. Air leaking into the pleural cavity causes a condition called _______________.

15. Causes of air in the pleural cavity include:

    a. ____

    b. ____

    c. ____

    d. ____

16. Symptoms of a pneumothorax include:

    a. ____

    b. ____

    c. ____

    d. ____

    e. ____

17. A thoracentesis may be performed to ____________________________________.

LEARNING ACTIVITIES - continued

18. The three causes of atelectasis are:

a. ______________________________

b. ______________________________

c. ______________________________

19. Atelectasis can be prevented by ______________________________ .

ACTIVITY #14. Pulmonary Embolism

Directions: Read the following.

A pulmonary embolism is caused by a clot or other foreign matter blocking one or more pulmonary arteries. This blockage causes a pulmonary infarct due to lack of blood supply to that area of the lung and, in turn, causes the tissue to become necrotic. The clot is usually formed in the lower extremities or in the abdominal cavity and travels to the lungs from there.

Do you recall the causes of a thrombus?

List three causes:

1. ______________________________

2. ______________________________

3. ______________________________

A thrombus can be prevented by ______________________________

The size of the clot and the size of the artery where it lodges determine the severity of the symptoms the patient experiences.

Study the comparison below.

Large Clot in Major Pulmonary Artery	Small Clot in Branch of Pulmonary Artery
1. Severe, sudden substernal pain	1. Mild susternal pain
2. Dyspnea	2. Mild dyspnea
3. Rapid and weak pulse	3. Tachycardia
4. Violent coughing	4. Cough with slight hemoptysis.
5. Rapid respirations	5. Elevation of temperature and WBCs
6. Petechiae	
7. Shock	
8. Sudden death	

LEARNING ACTIVITIES - continued

If a large enough pulmonary artery is occluded, death may be so sudden that the patient does not even have time to complain of symptoms. On the other hand, the arterioles affected may be so small that a diagnosis of pneumonia may be made. Even in this case, there will be hemoptysis.

If a pulmonary embolus is suspected, the patient should be placed on bedrest in a Semi-Fowler's position and should be kept as calm and as quiet as possible. The major factor in pulmonary embolism is prevention and the nurse shares much of the responsibility.

The patient's vital signs should be monitored q 15 minutes and oxygen must be readily available at the bedside.

A severe pulmonary embolus is a medical emergency. An airway must be maintained and measures must be taken to combat shock. The patient with a severe pulmonary embolus is usually transferred immediately to the intensive care unit where medication may be given to prevent further formation of clots and maintain a stable blood pressure.

If a postop patient or a bedridden patient begins coughing up blood-tinged mucous, notify the physician. This is not an observation to be shrugged off lightly. It is a serious medical emergency.

Below is a sample of nursing care and rationale for a patient with a pulmonary embolism. Add any other nursing approaches and rationales that you can.

Nursing Approach	Rationale
Confine to bedrest if not ordered already.	To prevent release of any more emboli.
Place in Semi-Fowler's position.	To facilitate breathing.
Take vital signs q 15 to 30 minutes depending on the patient's complaints of dyspnea and signs of cyanosis.	To continue observing for signs of shock.

LEARNING ACTIVITIES - continued

ACTIVITY #15. Laryngofissure and Laryngectomy

Directions: Read the following.

Laryngofissure and laryngectomy are both perfomed to remove a cancerous larynx.

Laryngofissure (Thyrotomy)

This operation is the splitting of the thyroid cartilage of the larynx in the midline of the neck, and the removal of the portion of the vocal cord that is involved in the growth of a tumor. Scar tissue will eventually replace the part of the vocal cords that was removed. The patient will not have the same quality of voice as before surgery and the patient may not be able to talk continuously for long periods of time. But the patient will be able to communicate without difficulty.

Treatment

The laryngofissure patient will have a tracheostomy tube inserted into the larynx during surgery. This tube usually remains inserted for one to two days postop. The patient will also have a nasogastric tube inserted for tube feedings.

Nursing Care

Nursing care is centered around caring for the tracheostomy. Observations include checking for respiratory distress and/or wheezing. Emotional support is also needed since the patient cannot speak for two or three days and then can only whisper for several more days. Do not forget to give good mouth and nose care since the patient has a nasogastric tube and is NPO.

Laryngectomy

A total laryngectomy consists of a complete removal of the epiglottis, the thyroid cartilage, the hyoid bone and two or three cartilage rings of the trachea. The remainder of the trachea is brought out to the neck wound and sutured in place to make a permanent opening.

Treatment

The patient may or may not have a metal or plastic tracheotomy tube inserted into the trachea. Some physicians prefer not to insert such a tube because it may cause tissue irritation. A nasogastric tube is used as a feeding tube until the patient can swallow without choking or until the inner sutures have healed. The dressing may be either a tight pressure dressing or several 4x4s. There may be a penrose drain sutured to the wound or a catheter attached to continuous suction.

Since each physician will treat each patient for individual needs, there is no way to determine what method of treatment your patient will receive until he/she returns from surgery. Whatever method of treatment is given to the patient, one important rule of thumb to remember is that the patient's airway must be kept open at all times. It is also essential to observe the characteristics of the patient's respirations since edema at the surgical site or a tight and bulky dressing may interfere with the patient's normal breathing.

LEARNING ACTIVITIES - continued

Eventually, with the help of a speech therapist, the patient can learn to talk by burping air that vibrates the esophagus to form words. Most of the patients can learn intelligible speech within three to six weeks after surgery. If this fails, various mechanical devices are available that vibrate in place of the vocal cords and sound quite natural. Information concerning laryngeal speech or mechanical devices can be obtained from the American Cancer Society or the International Association of Laryngectomies.

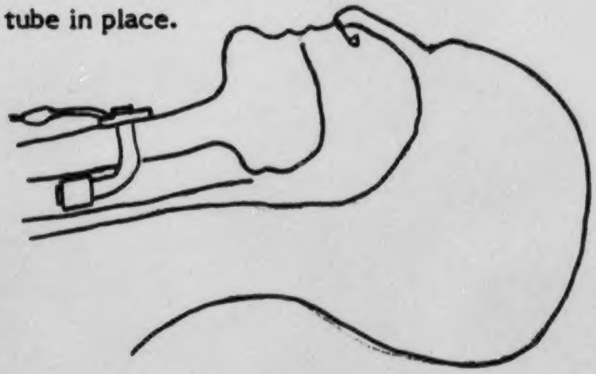
Emotional support for the patient and family is very important at this time since to be unable to communicate verbally can be a very traumatic experience.

ACTIVITY #16. Tracheotomy

Directions: Read the following.

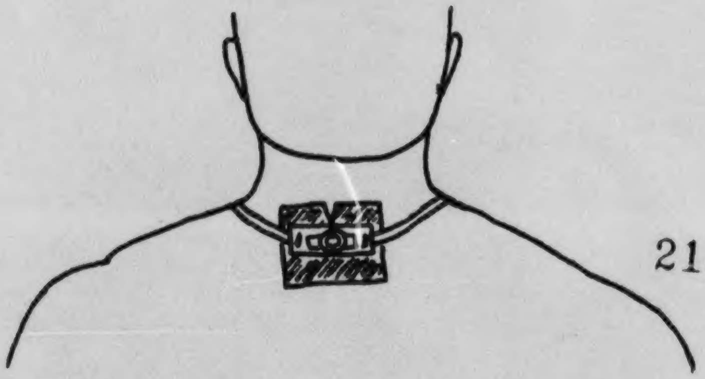
A tracheotomy is a surgery in which a physician makes an opening into the trachea to establish an airway. A patient may require a tracheotomy for many reasons. Some of these reasons may include vocal cord paralysis, tumor, infection, laryngeal obstruction, severe burns, possibility of aspiration in the comatose patient or need for effective removal of excessive secretions. The tracheotomy may be either temporary or permanent, depending on the reason it was performed. Once the opening is established in the trachea, a tracheostomy tube (ranging in size from no. 00 to no. 8) is inserted to maintain the opening.

The picture below shows a tracheostomy tube in place.



Left lateral view

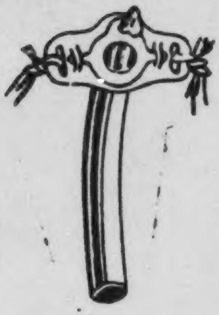
Anterior view

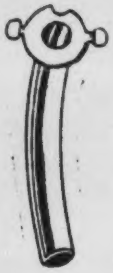


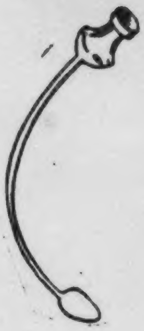
LEARNING ACTIVITIES - continued

A tracheotomy may need to be done in an emergency situation. Since this procedure involves the respiratory tract, it is desirable that the tracheotomy be done in surgery with strict aseptic technique. Tracheostomy tubes may be of either metal or plastic material. Twill tapes are attached to each side of the tube and then tied around the patient's neck to secure the tube so it won't become dislodged when the patient coughs. A sterile gauze is placed behind the trach tube to prevent irritation and also to catch secretions. This gauze should not be cut because it will fray, allowing strings to get into the trach. The parts of the tracheostomy tube include:

1. Outer cannula
2. Inner cannula
3. Obturator - The obturator is a guide used to assist with the outer cannula insertion. Once the outer cannula is in place, the obturator is removed and taped to the head of the bed for emergency use. The inner cannula is inserted and locked in place. (See diagram)


Outer cannula


Inner cannula


Obturator

Some of the plastic tracheostomy tubes have a cuff around the middle section of the tube. This cuff keeps air from leaking around the side of the trach tube and holds it in place. The cuff also allows for very efficient mechanical ventilation. The nurse must know that the cuff around the trach tube can cause irritation to the tracheal mucosa and it should be deflated every eight hours. Suction the patient well before deflating the cuff so that any and all secretions around the cuff are removed and are not aspirated.

Communication for the patient with a cuffed tracheostomy tube is limited to sign language and writing. The patient is unable to speak since the air is prevented from passing through the larynx. Be sure the patient is aware that this is only a temporary situation caused by the tracheostomy tube.

LEARNING ACTIVITIES - continued

Nursing Care Postop Tracheotomy

Patient Problem	Nursing Approach	Rationale
Patent airway	Humidified air to tracheostomy.	Keeps secretions moist.
	Suction q h and prn.	Maintains trach patency.
	Clear inner cannula q 2 h to 4h and prn.	Maintains patency and prevents mucus accumulation.
	Tape obturator to head of bed.	If trach comes out, obturator is needed to reinsert.
	Have standby tracheostomy tube available - same size and type.	Replacement available to maintain airway.
	Semi-Fowler's position - prevent forward flexion of neck.	Facilitates easier breathing. Prevents closing of airway.
	Administer O_2, IPPB, OR volume respirator.	Provides oxygenation and assists with respirations.
Cuffed tracheostomy tube	Deflate cuff 5 minutes q h.	To relieve tracheal tissue pressure. To prevent tracheal mucosa damage.
Tracheotomy stoma	Clean skin around trach q 4 h and prn with hydrogen peroxide followed by saline rinse.	Prevent tissue breakdown. Prevent bacterial growth and infection.
	Place clean 4x4 in place behind the trach (DO NOT cut as the threads can get into trach and be aspirated).	Prevent trach from irritating skin. Absorb secretions.
Respiratory distress or obstruction	Check vitals q 4 h x 48 then TID.	To detect early signs of distress.
	Note color.	Color changes indicate reduced oxygenation.
	Note if patient becomes restless.	Anxiety and restlessness increase with respiratory obstruction.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
	Auscultate chest for breath sounds q 2h to 4 h.	Chest sounds change with obstruction.
Hydration	Maintain IV's as ordered. I & O q 8 h and record.	To maintain fluid balance. To evaluate patient's hydration.
Unable to communicate	Provide pad and pencil. Provide magic slate. Ask yes—no questions.	To ease anxiety and provide means of communication.

Home Care Consideratons for the Tracheostomy Patient:

Patient Problem	Nursing Approach	Rationale
Educate family and patient in trach care	Involve family, patient and significant others in care. Assist with gathering of needed home equipment.	To prepare all for discharge. To lessen fears. To provide opportunity for questions and problems to be discussed in controlled situation. To have family prepared for home.
Showering	Inform patient of "no swimming." Advise patient to bathe with care.	To prevent aspiration of water.

Suctioning

Suctioning is a means of removing secretions that the patient is unable to bring up and expectorate. Obstruction of the airway will increase the patient's restlessness and pulse rate. The patient's general color may become cyanotic.

LEARNING ACTIVITIES - continued

General care when suctioning:

Patient Problem	Nursing Approach	Rationale
Infection	Good handwashing. Sterile catheter. Sterile gloves.	To lessen bacterial contamination (catheter going into respiratory tract) and to prevent infection.
	Separate catheter for oral and tracheal suctioning.	To prevent cross contamination.
	Sterile vented or Y catheter.	To prevent infection. To aide in control of suctioning.
Trachael tissue trauma	Maintain suction pressure at or below 560 cm of water for adults.	To prevent trachael tissue trauma.
	Avoid force when inserting catheter.	
	Apply suction only while removing catheter.	
	Suction must be released every 10 seconds and not more often than every 3 minutes.	
Anxiety	Explain procedure to patient.	Prior preparation lessens anxiety.
	Explain expected reactions.	
Trachael secretions	Suction q 1 h and prn.	To lessen mucus accumulation and prevent obstruction.

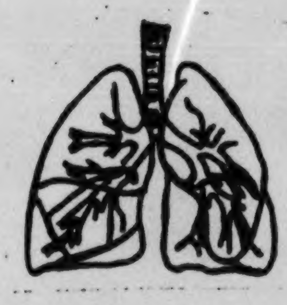
ACTIVITY #17. Chest Surgery

Directions: Read the following.

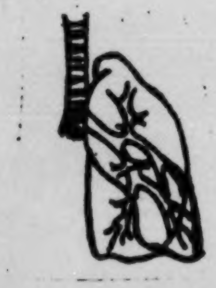
Chest surgery is necessary when conditions such as lung abscess, lung cancer, cyst, benign tumors or bronchiectasis exist. The extent of surgery depends on the extent of the disease or tumor. An exploratory throacotomy is an operation done to substantiate a suspected diagnosis of lung or chest disease. Segmental resection of the lung can be done in which only a small portion of lung tissue is removed. In a lobectomy only a lobe is removed and in a pneumonectony the entire lung is removed.

LEARNING ACTIVITIES - continued

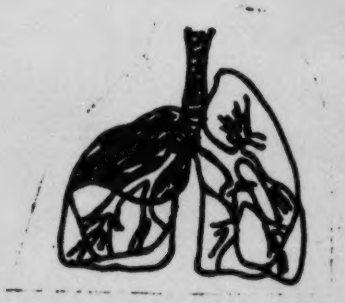
Pneumonectomy is usually done for bronchogenic carcinoma. For the first few days following chest surgery the patient is usually in intensive care or a cardiopulmonary unit. See diagram.



NORMAL LUNG



PNEUMONECTOMY



LOBECTOMY

The patient's emotional reaction to the proposed surgery may be affected by the general physical condition. The nurse should encourage the patient to communicate feelings and should report any special problems to the physician.

The immediate preparation before going to surgery includes postural drainage and mouth care. Patients are not given a narcotic as a rule, but they may be given a larger dose of atropine or barbiturate than that ordinarily administered to surgical patients.

The room should be prepared for the patient's return from surgery and should include equipment for any emergency that might arise. Oxygen should be brought to the room as well as a thoracentesis tray and a tracheotomy tray. If the patient is having a lobectomy, there will be drainage tubes. Sterile equipment for closed draingage with a pleural pump should be secured if it is ordered. A suction machine with catheters for oral and nasal suction and additional supplies may also be needed. If the patient is having a pneumonectomy, there usually are no drainage tubes. It is the responsibility of the nurse to understand the operation of all equipment and to be sure that it is in working order.

One way of alleviating some of the patient's fears is to encourage the patient to visit the intensive care unit in order to see the room set-up and talk with the intensive care unit nurses.

The surgery may be affected by the patient's emotional state. It is very important to prepare the patient for surgery allowing time for the patient to voice concerns and fears.

To prepare the patient for surgery, he or she not only needs to know about the surgery and to visit the intensive care unit, but also what nursing procedures will take place following surgery. He/she will need to know about the IV, amount of pain, tubes in chest, nasogastric tube, Foley, turning and coughing procedures.

LEARNING ACTIVITIES - continued

Chest surgery requires not only the usual equipment available postoperatively, but also equipment for any emergency. One must have on hand oxygen, a tracheotomy tray, throacentesis tray, pleural pump if ordered, and a suction machine. The equipment must be in good working order.

The following is a list of other postop expectations that you should explain to the patient having chest surgery.

1. Pain or numbness at the incision site due to the cutting of intercostal nerves.
2. Presence of IV's.
3. Oxygen by mask or cannula.
4. Chest tubes.
5. The necessity of exercising the arm on the affected side.

Be sure to stress that all these signs and treatments are routine for anyone having chest surgery. You might also arrange a visit from a patient who has already experienced such surgery.

Postop Treatments and Nursing Care

If you understand what to teach the patient preoperatively, there should be no question about general postop care you will give the patient. Listed below and on the following page is a summary of suggestions for nursing approaches to be taken to help relieve problems of the patient who has just had chest surgery.

Patient Problem	Nursing Approach	Rationale
Pain while deep breathing and coughing.	Lie on affected side. Apply pressure to the incision by having the patient hug a pillow or by placing your hand flat on the dressing. Do not turn unaffected side when the patient had a pnemonectomy to prevent mediasternal shift.	To help splint the area. To splint the incision.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Inability to breathe easily.	Place in semi-Fowler's position.	To, decrease pressure of abdominal organs on the diaphragm.
	Encourage patient to cough up tracheal and bronchial secretions q h.	To clear the airway.
	Medicate as needed.	To enhance patient cooperation.
	Use tracheal suction if patient cannot remove secretions by coughing.	If the patient cannot clear the airway, you will have to.
	Give oxygen therapy as ordered.	Mostly a supplement or supportive measure, both physically and emotionally.
	Auscultate chest for breath sounds q 2 h.	To establish any changes, especially decreased breath sounds on the unaffected side.
Stiffness of the arm on affected side or appearance of a drooping shoulder on the affected side causing scoliosis.	Passive range of motion on the day of surgery q 2 to 4 hr.	Increase circulation and muscle tone to the area when patient is too drowsy and in too much pain to do it.
	Active range of motion thereafter.	The sooner the patient can do the exercises, the sooner the patient will recover.
	Specific exercises such as patting top of head with hand of affected arm.	Chest and shoulder muscles were cut in surgery and should be exercised to regain use as soon as possible.
	Push shoulders back and bring the scapula as close together as possible. (Never overexercise, always provide periods of rest.)	

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Fluid Imbalance	Maintain parental fluids as ordered.	Maintain hydration.
	Measure intake and output.	Early detection of dehydration, fluid retention or renal failure.
Hemorrhage	Observe dressing q 2 h.	To detect increased drainage or hemorrhage.
	Check chest tube q 1 to 2 h.	To maintain function.
	Check vital signs q 2 h.	To detect hemorrhage (hemorrhage will cause increased pulse rate, lower BP and respirations will increase).
Anxiety	Give emotional support:	
	a. Explain all procedures.	Fear of unknown lessened.
	b. Spend as much time with patient as possible.	To lessen anxiety.
	c. Encourage expression of fears and concerns.	Verbalizing eliminates anxiety.
	d. Listen actively.	Showing interest and support.
	e. Pastoral services if desired.	

Complete the following exercise. List ten nursing observations you should make on a patient who is just returning to the unit after chest surgery.

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

LEARNING ACTIVITIES - continued

5. ______________________________

6. ______________________________

7. ______________________________

8. ______________________________

9. ______________________________

10. ______________________________

After you have listed your ten nursing observations, discuss them with others and your instructor in a small group. Or, you may discuss your observations with your instructor, individually.

ACTIVITY #18. Review Exercise

__Directions:__ Answer the following questions.

1. A pulmonary embolism is ______________________________ .

2. Symptoms of a large emboli include:

   a. ______________________________

   b. ______________________________

   c. ______________________________

3. The three actions or approaches you should take as soon as pulmonary emboli are suspected are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

4. A laryngofissure is ______________________________ .

5. A laryngofissure is performed when ______________________________ .

6. A patient with a laryngofissure or a laryngectomy will have a nasogastric tube inserted to: ______________________________

   ____

7. With a laryngectomy, the trachea is brought out through an opening in the ______________________________.

LEARNING ACTIVITIES - continued

8. A patient having a laryngectomy can speak in more than one way. List some.

   a. ____________________

   b. ____________________

9. The removal of an entire lung is called a(n) ____________________ .

10. The patient experiences pain after a thoracotomy because the ____________ nerves have been severed.

11. Arm exercises are performed following a thoracotomy to ______________ .

12. After a thoracotomy, the patient should drink plenty of fluids to __________

    ____

13. A tracheostomy tube is inserted into the trachea to:

    a. ____________________

    b. ____________________

14. The two tracheotomy cannulas are called:

    a. ____________________

    b. ____________________

15. The inflatable and deflatable cuff on the tracheotomy tube is located on the ____________ cannula.

16. The cannula that is removed for cleaning is the ____________ cannula.

17. The suction apparatus is used to____________________

18. Suction to the trachea is maintained when your thumb is ______________ "Y" connection.

19. You should change suction cathaters after ____________________ .

20. Suction should only be maintained when you ____________________ .

21. You should rotate the catheter between your thumb and your forefingers to:

    ____

22. The catheter should not remain in the trachea for more than ____ seconds.

23. After suctioning a patient's trachea, you should wait ____ minutes before suctioning it again.

LEARNING ACTIVITIES - continued

24. Lint should be removed from the inner cannula and the outer cannula dressing should be lint-free because the patient may ______________________________ .

25. The inner cannula should be cleaned every ______________________________ .

26. Moving the outer cannula unnecessarily will cause ______________________ .

27. A spare sterile "trach" tube should be available at the ____________________ .

28. Nasopharyngeal suction stimulates __________________________________ .

ACTIVITY #19. Nursing Assessment Relating to the Respiratory System

Directions: Read the following.

Chest auscultation should give an estimate of the intensity of breath sounds in the different regions of the lung. Auscultation is the process of listening for sounds produced in some part of the body cavities, especially chest and abdomen, in order to detect or judge an abnormal condition. When the chest is auscultated, it is important to note whether breath sounds are normal, indicating a free flow of air in and out of the lungs. (In the emphysematous patient, the breath sounds may be markedly decreased or even absent.) Rales and wheezes are noted in respiratory problems. Evidence of retained secretions may be evaluated during auscultation by asking the patient to cough and noting any signs of rhonchi or wheezing.

The nursing assessment may also include the following:

1. What signs and symptoms are present?
   a. Cough
   b. Amount of expectoration and color
   c. Hemoptysis
   d. Chest pain
   e. Dyspnea

LEARNING ACTIVITIES - continued

2. What is the smoking history?
    a. How long has the patient been smoking?
    b. How much is the patient currently smoking?
3. What is the patient's cardiopulmonary tolerance while:
    a. Resting
    b. Eating
    c. Bathing
    d. Walking
4. What is the breathing pattern?
    a. How much exertion is required to produce dyspnea?
5. What is the physiologic age of the patient?
    a. General appearance
    b. Mental alertness
    c. Behavior
    d. Degree of nutrition
6. What other medical condition exists?
    a. Allergies
    b. Other

The important factor to check is whether breath sounds are present or absent. Presence of normal breath sounds is proof that air is entering the lungs. Absences of breath sounds in areas where they should be heard suggests that the alveoli are not getting air.

When listening to the chest, it is best to place the patient in a sitting position facing away from you and have him/her take deep breaths with an open mouth each time you check a lobe. Place the diaphragm of your stethoscope on one shoulder near the neck but off the vertebra, ask the patient to breathe in deeply and breathe out on your command while you listen. Then place your stethoscope on the opposite side. This checks the upper lobes of both lungs. With the same instructions to the patient, check the middle lobes (except left) by placing your stethoscope between the scapula and vertebra on one side, then the other. To check the lower lobes, place your stethoscope below the scapula on both sides, making sure it is between the ribs (intercostal space). If you place the stethoscope over a bone, such as a rib, you decrease your hearing.

LEARNING ACTIVITIES - continued

Abnormal Breath Sounds

Rales are abnormal, or additional sounds, and are always pathologic. They may be subdivided into:

1. Rhonchi - continuous coarse sounds
2. Moist rales - interrupted cracking sounds

These abnormal sounds indicate the presence of fluid somewhere in the respiratory tract. The fluid or exudate may result from infection, inflammation, aspiration, edema or retained secretions.

ACTIVITY #20. Clinical Assignments

Directions: Read the following objectives that are specific to the care of patients with diseases of the respiratory system. You are responsible for their care, as well as the general clinical objectives, when assigned to such patients.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:
    a. Pain
    b. Fear
    c. Anxiety
    d. Respiratory distress
2. Demonstrate the nursing procedure for diagnostic tests done for your assigned patients and determine if the test results were within normal range. Include:
    a. Sputum exam
    b. Vital capacity
    c. Gastric washings
    d. Blood studies: RBC, WBC, HGB, Blood gases
    e. X-ray
    f. Bronchography

LEARNING ACTIVITIES - concluded

3. Demonstrate nursing care of patients with therapy specifically related to the respiratory system. Include:
    a. IPPB
    b. Tracheotomy care
    c. Underwater suction drainage
    d. Oxygen therapy
    e. Humidifiers
4. Demonstrate teaching patients:
    a. General health principles
    b. Specific methods of avoiding or spreading infections
5. Explain how respiratory conditions may handicap persons:
    a. Socially
    b. Physically
    c. Emotionally

unit 17

NURSING CARE OF ADULTS

Module D - Nursing Care for Patients with Diseases of the Gastrointestinal System

RATIONALE

To give safe, effective nursing care to a patient with diseases relating to the gastrointestinal system, you must know the physiological and anatomical changes that occur and the signs and the symptoms that must be observed with each disease.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity #29 when given a clinical assignment of caring for a patient with a disorder of the gastrointestinal system.
2. Identify the preparation, procedure and postprocedure for tests used to diagnose gastrointestinal diseases.
3. Identify vocabulary words from Activity #1.
4. Identify the normal anatomy and the anatomical and physiological changes that occur within the body as a result of disease or surgery of the gastrointestinal system.
5. Identify the most common causes, signs, symptoms and treatments given patients with diseases and disorders affecting the gastrointestinal system.
6. Identify the most appropriate nursing action that should be taken when given a situation of a patient with a disease of the gastroinestinal system.
7. Verbally describe or name the nursing action, patient symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the gastrointestinal system.
8. Demonstrate appropriate nursing assessments of diseases relating to the gastrointestinal system.

LEARNING ACTIVITIES

Directions: The information you need to complete Module D is included in this module and in the reading assignments from your textbook Total Patient Care (5th edition). You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the gastrointestinal system, review Unit 4, Module D, Unit 8, Modules D-5, K-1 and K-2, and also Unit 5 on nutrition. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material found in this module, Unit 4, Unit 5 and Unit 8. There are many

LEARNING ACTIVITIES - continued

diseases and disorders common to the gastrointestinal system; however, the diseases and conditions discussed in this module are the most common. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor for help.

ACTIVITY #1. Introduction to the Gastrointestinal System

Directions: Study Chapter 16, "Nursing the Patient with Problems of the Gastrointestinal System," of your textbook Total Patient Care. Now, review Unit 4, Module D on the anatomy and the physiology of the digestive system. After reviewing Unit 4, Module D, use a medical dictionary or any other resource of your choosing and define the terms listed below and on the following pages.

1. Anastomosis: ____________________
2. Anorexia: ____________________
3. Biliary tract: ____________________
4. Bilirubin: ____________________
5. Cholecystectomy: ____________________
6. Cirrhosis: ____________________
7. Chyme: ____________________
8. Colitis: ____________________
9. Contaminated: ____________________
10. Decompression: ____________________
11. Dehiscence: ____________________
12. Diverticulitis: ____________________
13. Dumping syndrome: ____________________
14. Dysphagia: ____________________
15. Emulsify: ____________________
16. Epigastric: ____________________
17. Evisceration: ____________________
18. Flatus: ____________________
19. Gastric lavage: ____________________

LEARNING ACTIVITIES - continued

20. Gastritis: ______________________________

21. Gastrostomy tube: ______________________________

22. Gavage: ______________________________

23. Hemorrhoids: ______________________________

24. Hemorrhoidectomy: ______________________________

25. Hernia: ______________________________

26. Hyperalimentation: ______________________________

27. Incarcerated: ______________________________

28. Intussusception: ______________________________

29. Laparotomy: ______________________________

30. Malaise: ______________________________

31. Mastication: ______________________________

32. Nasogastric tube: ______________________________

33. Omentum: ______________________________

34. Perforation: ______________________________

35. Peritoneum: ______________________________

36. Peristalsis: ______________________________

37. Peritonitis: ______________________________

38. Polyps: ______________________________

39. Prothrombin time: ______________________________

40. Pyloric stenosis: ______________________________

41. Pyloroplasty: ______________________________

42. Regeneration: ______________________________

43. Sclera: ______________________________

44. Stoma: ______________________________

45. Ulceration: ______________________________

LEARNING ACTIVITIES - continued

46. Vagotomy: ______________________________

47. Valvula: ______________________________

48. Villi: ______________________________

49. Viscera: ______________________________

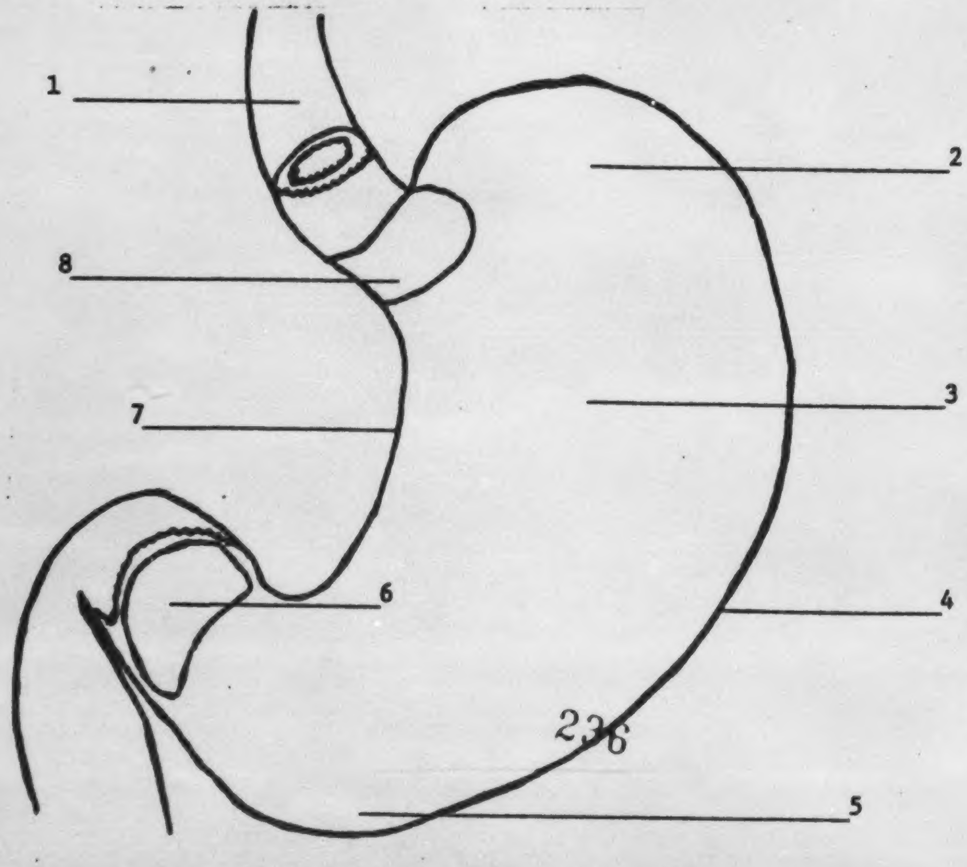
ACTIVITY #2. The Stomach

Directions: Read the following information, then label the parts of the stomach.

The stomach is a J-shaped organ lying under the diaphragm. It is pushed to the left side by the liver, which occupies a large area on the right side.

Food is stored in the stomach from one to six hours. During this time it is subject to the stomach's peristaltic action, which is a mechanical breaking down of the size of the food particles. The food also comes in contact with many gastric juices that break down the food's chemical composition. Pepsin and hydrochloric acid begin the digestion of proteins. The lipase breaks the fat apart much as soap does to the grease on a frying pan.

Because hydrochloric acid is present in the stomach, the contents of the stomach are very acid. This is important to remember when studying disorders of the stomach.



LEARNING ACTIVITIES - continued

ACTIVITY #3. Diagnostic Tests Performed to Confirm Stomach Disorders

Directions: Read the following.

Esophagoscopy and Gastroscopy

These procedures are performed so that the physician may visualize the esophageal and the stomach linings (mucosa). During these procedures, a biopsy may also be performed. These may also be performed as emergency treatment for a child who has swallowed a foreign object.

Preparation, Procedure and Postprocedure

1. Preparation
   a. Explain the procedure to the patient.
   b. Permit must be signed.
   c. NPO for eight to twelve hours.
   d. Preop medication may be ordered to decrease secretions.
   e. Remove dentures and glasses.
2. Procedure (See diagram on the following page)
   a. Local anesthetic sprayed to pharynx to depress the gag reflex.
   b. Fiberscope is passed through the mouth and esophagus and into the stomach.
3. Postprocedure
   a. NPO until the gag reflex returns, usually within four hours.
   b. Warm saline gargle for sore throat after the anesthetic has worn off.
   c. Rest. The procedure is very tiring to the patient.

LEARNING ACTIVITIES - continued

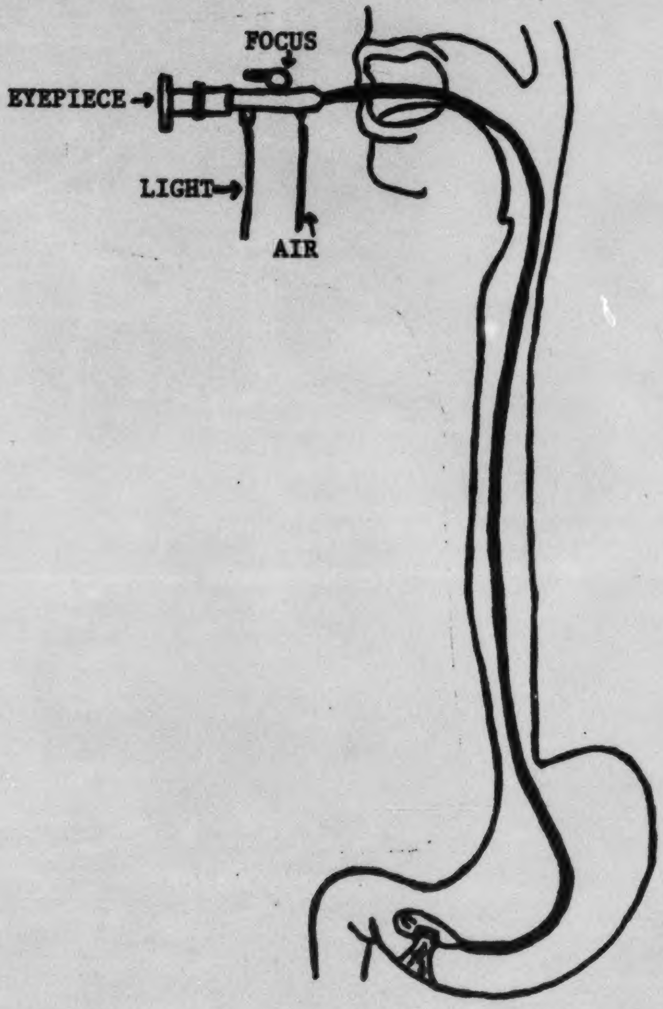

FOCUS
EYEPIECE
LIGHT
AIR

Diagram of a Gastroscopy
(Using a Fiberscope)

LEARNING ACTIVITIES - continued

Gastrointestinal (GI) Series

This x-ray procedure is performed to determine any anatomical changes in the stomach or the small bowel (duodenum). It will detect inflammation, tumors or ulcerations.

Preparation, Procedure, and Postprocedure

1. Preparation
   a. Explain the procedure to the patient.
   b. NPO at 2200 or midnight.
   c. Smoking is discouraged because it increases the flow of gastric juices.
2. Procedure
   a. Patient drinks one to two cups of barium (radiopaque substance).
   b. First, x-rays are taken with the patient standing. Then the patient is placed on a tilted table and assumes many positions while the table tilts and more x-rays are taken as the contrast medium moves to different areas.
   c. Patient returns to the room for an hour or two and then goes back to x-ray for more pictures. These will show how fast the stomach contents are emptying into the duodenum.
3. Postprocedure
   a. Breakfast or a snack is eaten.
   b. The physican may order a cathartic to prevent the barium from hardening in the intestinal tract and causing an obstruction.

Gastric Analysis

This test determines the amount of free hydrochloric acid (HCL) in the stomach. Achlorhydria (no HCL) usually indicates pernicious anemia or a gastric malignancy. An increase in HCL could indicate a duodenal ulcer.

Preparation, Procedure and Postprocedure

1. Preparation
   a. Explain the procedure to the patient. Tell the patient that although it is not painful, it may be uncomfortable.
   b. NPO for twelve hours.
   c. No other special preparation.

LEARNING ACTIVITIES - continued

2. Procedure

   a. A nasogastric tube is passed through the nostril to the stomach.

   b. All the stomach contents are aspirated, labeled and sent to the lab.

   c. A nasogastric tube is connected to low-suction for a set period of time (1/2 hour to one hour) and again the specimens are labeled and sent to the lab.

   d. Histamine or histalog (betazole) is sometimes given after the first or second specimens to stimulate gastric secretions.

   e. Vital signs should be taken immediately after giving histamine to check for increased pulse and decreased blood pressure.

   f. Stomach contents are again aspirated at 15 to 20 minute intervals for one hour and each specimen is sent to the lab.

NOTE: This procedure takes a total of 3-4 hours.

3. Postprocedure

   a. Remove the NG tube.

   b. Patient may eat a meal.

Tubeless Gastric Analysis

This procedure can determine whether there is any free hydrochloric acid in the stomach. It is useful as a screening technique for detection of achlorhydria.

1. Preparation

   a. Explain the procedure to the patient.

   b. NPO after midnight.

2. Procedure

   a. An early urine specimen is taken.

   b. The patient is given caffeine sodium benzoate.

   c. After one hour the patient voids, and the entire specimen is saved, labeled and sent to the lab.

   d. Give the patient one packet of an exchange resin (Diagnex Blue) with a glass of water.

   e. Two hours later the patient voids and the specimen is sent to the lab.

LEARNING ACTIVITIES - continued

Absence of the dye in the urine indicates that free HCL acid probably was not secreted.

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. The four most common tests used to determine stomach disorders are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

2. The patient will have to be NPO for at least six hours before which diagnostic test? ______________________

3. The patient may eat immediately after an esophagoscopy. TRUE FALSE

4. Enemas are given before a GI series. TRUE FALSE

5. Enemas are given after a GI series. TRUE FALSE

6. A Diagnex Blue test is a urine test to ______________________ .

7. With a gastric analysis the lining of the stomach may be directly seen. TRUE FALSE

8. Histalog is given to increase gastric secretions. TRUE FALSE

9. A stomach ulcer can be diagnosed from a GI series. TRUE FALSE

10. The test that determines the presence or absence of HCL is ______________.

ACTIVITY #4. Total Parenteral Nutrition (TPN)

Directions: Read the following.

Hyperalimentation

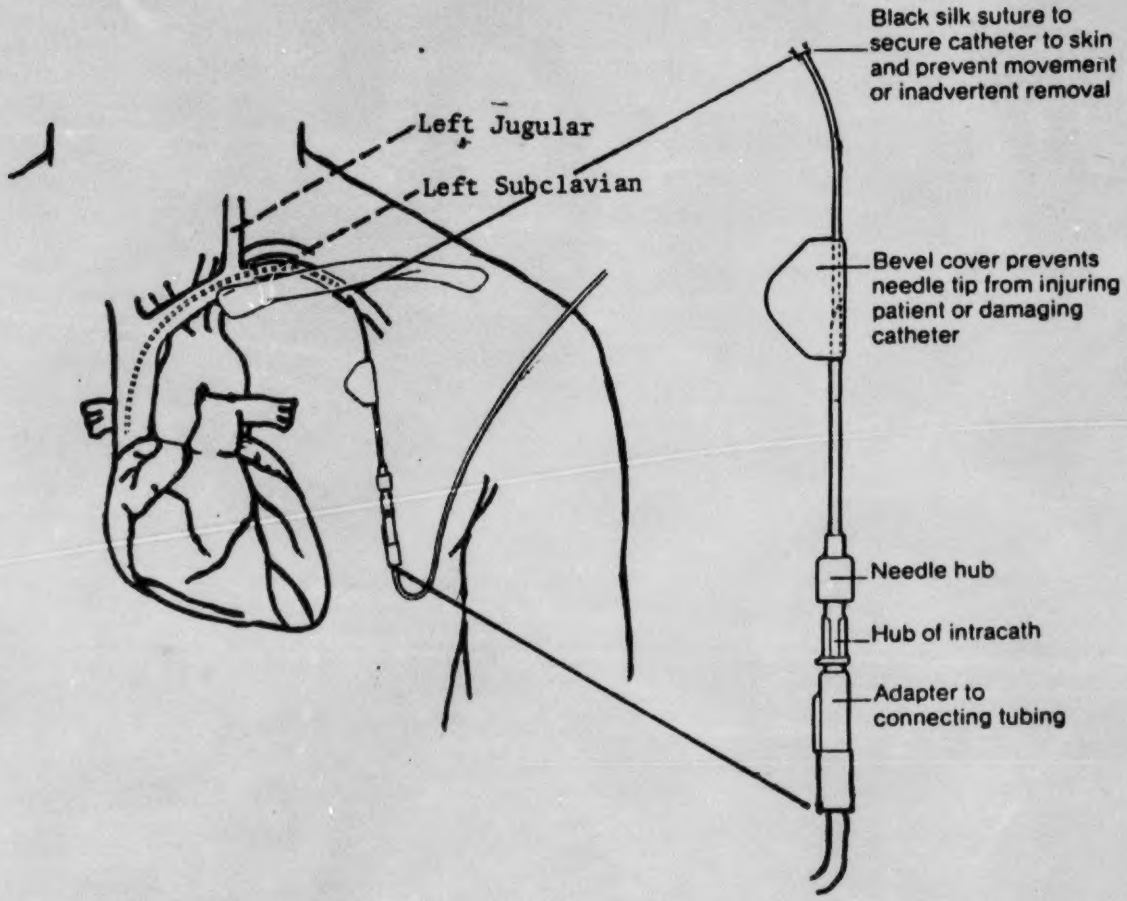
Hyperalimentation is the new technique of administering large amounts of simple, basic nutrients by intravenous infusion. It is specifically ordered by a physician and is always prepared in the pharmacy. Although it is not a specific treatment for patients with gastrointestinal disease, many patients suffering from these disorders may be possible candidates. Selection of patients for this procedure is based on nutritional status and the need for "foodstuffs" readily available for tissue use. Generally, protein by hydrolysate in a concentrated dextrose (between 50% and 70%) and water solution is administered. It is a highly concentrated mixture and therefore must be given in a large vein, such as the superior vena cava, through the subclavian or internal jugular vein. The flow rate must be extremely slow and constant or

LEARNING ACTIVITIES - continued

complications will occur. The rate is usually ordered by the physician and kept as accurately as possible by using electronic devices such as an IVAC for regulating the flow.

Strict asepsis is essential throughout the entire time that the patient is on hyperalimentation. Study the following diagram showing a hyperalimentation treatment.

Hyperalimentation Treatment


Black silk suture to secure catheter to skin and prevent movement or inadvertent removal
Left Jugular
Left Subclavian
Bevel cover prevents needle tip from injuring patient or damaging catheter
Needle hub
Hub of intracath
Adapter to connecting tubing

The catheter is inserted by the physician using aseptic technique. The catheter is sutured into place. A sterile dressing is applied over the site, using nonporous adhesive tape to secure the dressing, making it completely occlusive. Placement of the catheter must be verified by x-ray before infusion of hyperalimentation solution begins.

LEARNING ACTIVITIES - continued

In caring for an intravenous line and catheter you need to make sure that:

1. The hyperalimentation line is not used for the administration of medications, blood, blood products or withdrawing blood.

2. The flow rate is kept constant and continuous. Notify the R.N. and/or physician of drastic increase or decrease in rate.

3. The dressing change is done by an R.N. and is usually done with a bottle/bag and tubing change every 12 to 24 hours, using strict aseptic technique. As an LPN you may be asked to assist.

Remember the following procedure is done by an R.N. As an LPN you may only assist.

   a. Remove the dressing carefully.

   b. Inspect the catheter site for redness, swelling or drainage.

   c. Cleanse the skin with acetone and/or freon.

   d. Change the IV tubing completely, including the extension.

   e. Paint the area around the catheter with Betadine prep solution.

   f. Apply Benadine ointment to the puncture site.

   g. Paint the skin around the site with Tincture of Benzolin.

   h. Apply an occlusive sterile dressing.

   i. Chart dressing change, date, time and appearance of site on nurses's notes.

4. Patient observations are made for signs or complications resulting from therapy.

   a. Blood chemistries are usually done daily and when solution additives are changed, and then once a week. (These are ordered by the physician.)

   b. Urines are screened for sugar and acetone at each voiding. Notify physician when sugar is 3+ and acetone is present.

   c. Maintain accurate intake and output.

   d. Monitor the patient's weight daily.

   e. Monitor the patient's temperature four times daily. All observations recorded in the chart.

   f. Listen to breath sounds every shift.

   g. Observe for ascites and ankle edema.

LEARNING ACTIVITIES - continued

5. The following precautions are observed:

   a. An IV of 10% dextrose in water is to be kept at the bedside and administered at the same rate as the hyperalimentation solution if: (10% dextrose in water may be administered via peripheral IV)

      (1) Hyperalimentatin solution precipitates.

      (2) Tubing should separate and become contaminated.

      (3) The patient becomes septic and the physician has discontinued the solution temporarily.

      (4) The hyperalimentation line becomes dislodged.

   b. Hyperalimentation solution should be started again as soon as possible.

   c. The intravenous catheter should be sent for culture when removed from the patient.

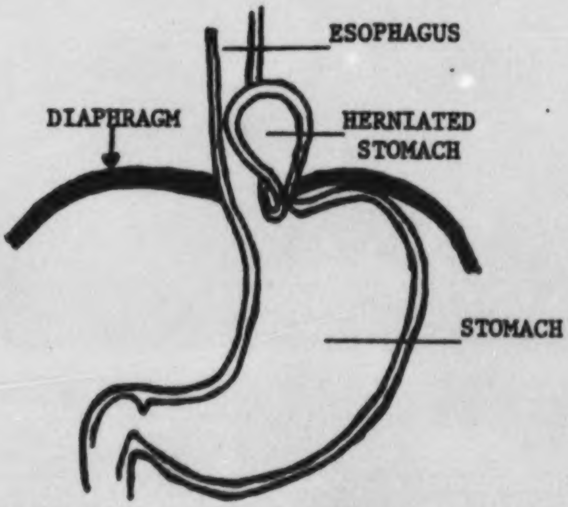
   d. The label on the hyperalimentation bag is checked against the doctor's orders by the nurse before administration of the solution.

   e. Hyperalimentation is charted as hyperalimentation solution started, date, time, amount, rate, site and by whom on the IV sheet.

ACTIVITY #5. Hiatus Hernia

__Directions:__ Read the following and study the diagram.

A general definition of a hernia is the projection of an organ from the cavity that normally contains it into the adjoining cavity.



A hiatus hernia occurs when the stomach slides through the esophagus opening in the diaphragm.

The patient usually complains of pain and heartburn under the sternum after meals, when bending over and when lying flat in bed.

The patient should be told to eat slowly, to remain in a semi-Fowler's position for a period of at least one-half hour after meals and the head of the bed should be placed on six to eight-inch shock blocks. All of these measures will help to prevent the stomach from sliding through the diaphragm into the thoracic cavity.

LEARNING ACTIVITIES - continued

ACTIVITY #6. Gastritis

Directions: Read the following information and complete the chart provided.

Gastritis, as the word indicates, is an inflammation of the stomach. To be more specific, it is an inflammation of the mucosa lining of the stomach. The mucosa becomes red, edematous and may show gray patches full of purulent material.

The cause of gastritis is usually ingestion of large amounts of food or alcohol and, therefore, the prevention would be to avoid "over" eating or "over" drinking. Once a person has gastritis and is nauseated and vomiting, the patient should be NPO, have IV fluids running with electrolyte replacement and be given medication to relax the stomach muscles. If the condition continues, a gastroscopy will probably be performed. If chronic gastritis is diagnosed from the gastroscopy, the patient will be placed on a bland diet and antacids. The physician will also suggest that the patient avoid foods and situations that cause gastritis to "flare up."

To help you to review the "do's" and the "do not's" of a bland diet, complete the following chart. Review Unit 5, "Nutrition," if you have questions or do not remember foods on this diet.

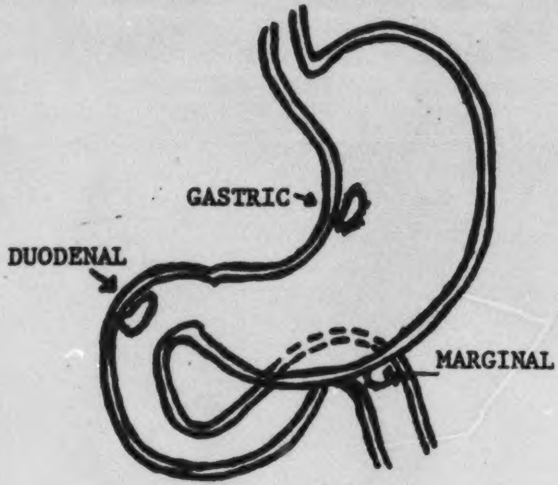
Directions: List the foods that are recommended ("do's") and those that should be avoided ("do not's") in the chart below.

Foods Recommended on Bland Diet "DO'S"	Foods to Avoid on a Bland Diet "DO NOT'S"

LEARNING ACTIVITIES - continued

ACTIVITY #7. Peptic Ulcer

Directions: Read the following and study the diagram showing the most common sites of peptic ulcers.



A peptic ulcer can be defined as a lesion of the mucous membrane or muscle tissue of the esophagus, the stomach or the upper duodenum. Although this ulcer develops for many reasons, the most widely accepted causes are: an increase in gastric secretion of hydrochloric acid, lessened resistance of some tissue to defend itself against breakdown and heredity, which includes hormones, home environment, emotional pressure, personality traits and stress.

Some drugs, such as aspirin and cortisone, also contribute to this tissue breakdown and are contraindicated.

Because an open wound in the upper gastrointestinal tract is being bathed with gastric secretions, the patient can expect to experience some pain or burning sensation, especially when the stomach is empty. (The hydrochloric acid has no food to digest so it eats away at the stomach.) The pain is usually located in one small area and is usually at its worst two to three hours after eating, particularly when spicy foods have been eaten. The pain or burning sensation will probably subside or disappear after the patient eats something bland or takes an antacid. Taking into consideration the causes of an ulcer and the signs and the symptoms of an ulcer, study the nursing care plan below and on the following page and make any additions that you think should be made to the nursing approach and/or rationale.

Patient Problem	Nursing Approach	Rationale
1. Burning pain on a empty stomach.	Diet of milk and antacids may be alternated q30 min.	Stomach acids are constantly neutralized.
	Between-meal feedings if patient is not restricted to milk and an antacid.	Keep something in the stomach to keep the acid from burning the mucosa.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
2. Certain foods irritate the ulcer.	Educate patient about a bland or nonirritating diet.	Pork and spices tend to increase gastric secretions.
	Find out which foods upset each patient.	7-Up may cause one patient distress, but not another. This is why individualized care is a necessity.
	Tepid foods	Foods that are too hot or too cold will irritate the stomach.
	No alcoholic beverages on an empty stomach (may be taken with meals - in moderation only).	This increases secretions and irritates the mucosa.
3. Emotional stress (different for each patient!). Could be work or could be homelife.	Let the patient verbalize feelings. If psychiatric help is needed, help the patient to accept and to understand what is involved.	The patient needs to talk out problems and may give clues to stress causing emotional problems. These clues may be passed on to the physician.

Other Nursing Approaches

1. Patient should eat slowly and chew food thoroughly.
2. Patient should quit smoking.
3. The patient's diet and care should continue and should not stop as soon as the symptoms disappear.
4. Rest is essential - both physical and emotional rest.
5. The patient should avoid overeating, overplaying or overworking. Everything should be done slowly and in moderation.

LEARNING ACTIVITIES - continued

ACTIVITY #8. Gastrointestinal Intubation

Directions: Read the following.

Gastrointestinal intubation is the insertion of a short or long flexible rubber or plastic tube into the stomach or intestine via the mouth or nose. The purpose may be diagnostic, preventive or therapeutic. Aspiration (suctioning) through this tube is achieved by various means: suction from a syringe, suction from an electric suction machine or suction from a built-in wall suction outlet.

Short Tubes

A nasogastric catheter or so called short tube is introduced through the nose or the mouth into the stomach. Two short tubes are the Levin tube and the Salem sump tube.

The Levin tube is a single lumen tube made of plastic or rubber with holes near its tip. The tube is used to remove fluid and gas from the upper gastrointestinal system or to obtain a specimen of gastric contents for laboratory studies. It may also be the means of administering medications or feeding (gavage) directly into the gastrointestinal tract.

The Levin tube usually has circular marks on the tubing. When the tube has been inserted in the stomach, the section at the patient's nostril is located between the second and third marks. Gas and the fluids that collect in the stomach may be removed by aspiration through the tube.

The gastric sump tube (Salem, Ventrol) is a radiopaque clear plastic double-lumen nasogastric tube. It is used to decompress the stomach and keep it empty. The inner, smaller tube vents the larger suction-drainage tube to the atmosphere by means of an opening at the distal end of the tube. It is passed the same way as the Levin tube. It can protect gastric suture lines because, when used properly, the sump pump never allows the force of suction at the drainage "eyes" or outlets to exceed 25 mm. Hg, the level of capillary fragility. This action is controlled by a small vent tube (blue pigtail).

To prevent reflux of gastric contents through the vent lumen (blue pigtail), the vent lumen is kept above the patient's midline, otherwise it will act as a siphon. Irrigation may be done through either the main lumen or the vent lumen. If the vent lumen is used, irrigation is followed with 10 ml. of air to clear the lumen. The diagram on the following page shows how to correctly tape a nasogastric tube to the patient's nose.

LEARNING ACTIVITIES - continued

Nasogastric Tube Only

The long tubes, or nasoenteric tubes, are introduced through the nose, esophagus and stomach into the intestinal tract. They are used to aspirate the intestinal contents to prevent gas and fluid distention of the coils of intestine (decompression).

The long tubes are the Miller-Abbott, the Harris and the Cantor tubes. These are used in the active treatment of intestinal obstruction of the small intestine. They also are used prophylactically, being inserted the night before an abdominal operation to prevent obstruction after the operation. The intestine is threaded on the tube and therefore shortened and held together compactly, making it relatively easier to pack off the intestine at the time of operation on the colon.

Because peristalsis either decreases or stops for 24 to 48 hours after an operation due to the effects of anesthesia and of visceral manipulation, nasogastric or nasoenteric suction prevents certain problems from developing. Fluids and flatus are evacuated, so that vomiting is prevented and tension reduced along the incision line. Edema, which can cause obstruction, is also reduced. Blood supply to the suture line is enhanced, thereby providing nutrition to the site. Usually, the tubes are allowed to remain in place after the operation until peristalsis is resumed, as shown by the passage of gas by rectum.

The Miller-Abbott tube is a double-lumen, three meter (10 foot) tube. One lumen is used to introduce mercury or to inflate the balloon at the end of the tube; the other lumen, entirely independent, is used for aspiration. Before the tube is inserted, the balloon should be tested and its capacity measured; it is then deflated completely. The tube should be lubricated sparingly and chilled well before the tip is inserted through the patient's nose. Markings on the tube indicate the distance it has been passed.

The Harris tube is a single-lumen mercury-weighted tube of about 1.8 meters (six feet). This tube has a metal tip that is introduced first into the nostril after having been lubricated. The mercury-weighted bag follows. The weight of the mercury carries the bag by gravity. Since this is a single-lumen tube that is used only for suction and irrigation, there is no difficulty in irrigating it. Usually a Y tube is attached to the end of the tube, so that the suction apparatus is attached to one side, and an outlet with clamp is available on the other side for irrigating purposes.

LEARNING ACTIVITIES - continued

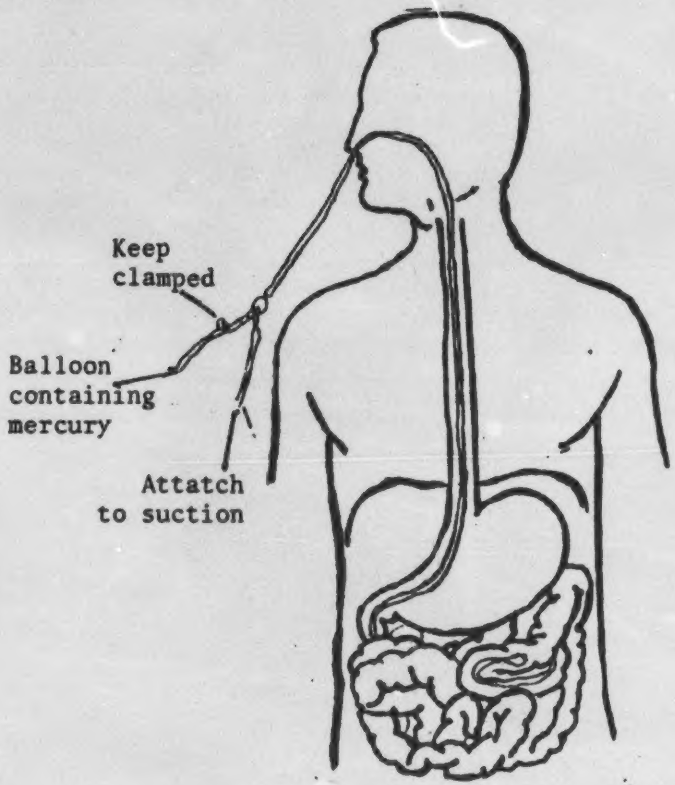
The Cantor tube is three meters (10 feet) long. Its distinguishing feature is that it is larger than the other long tubes, and has four or five ml of mercury in the bag at the extreme end of the rubber tubing. Prior to insertion, the bag is wrapped about the tube. After the tube is lubricated, it is passed through the nostril and advanced to the esophagus. The patient is in a sitting position and is offered sips of water to facilitate passage of the tube. Fluoroscopy is helpful in passing the tube into the duodenum.

Nursing Care for Gastrointestinal Decompression

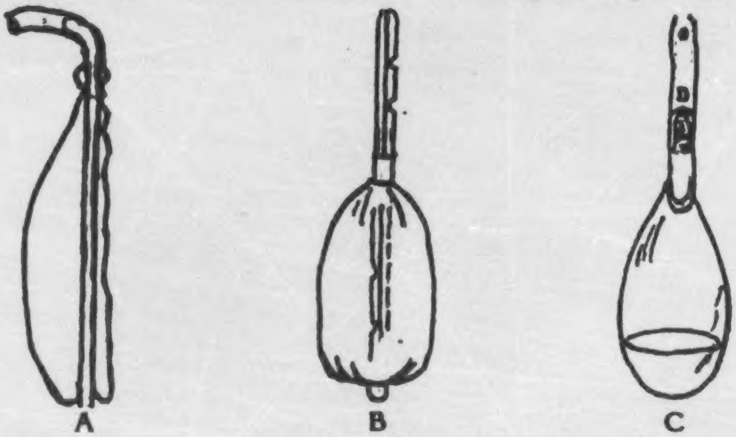
1. Patency of decompression tube must be maintained.
2. Normal saline irrigation as ordered.
3. Keep nasogastric tube taped to nose. Intestinal decompression tubes are not taped.
4. Keep npo unless physician orders sips of water or hard candy.
5. Nostril care at least once each shift and prn, use water-soluble jelly as lubricant.
6. Oral care every 2 hours, using mouthwash and lemon and glycerin swabs for lips and mucous membranes.
7. To prevent injury or trauma on nostril, keep nasogastric tubing pinned to gown. To prevent displacement, intestinal decompression tubing should be in a loop on the bed.
8. Keep on low suction unless otherwise ordered.
9. Empty drainage bottle at end of each shift and record on Intake and Output sheet.
10. Observe and record color, appearance, odor and presence of mucus or bile. Hemocult for presence of blood.
11. Notify RN if suction apparatus is not functioning properly and tube is not draining after being irrigated with ordered solution.

Study the diagrams of decompression tubes on the following page.

LEARNING ACTIVITIES - continued


Keep clamped
Balloon containing mercury
Attatch to suction

Intestinal decompression tube in place. Note that the tube is not taped to the nose. **A,** Arm of Y tube leading to balloon containing mercury or air must be kept clamped. **B,** Arm of Y tube is attached to rubber tubing leading to suction.



Decompression tubes. **A,** Harris tube; **B,** Miller-Abbott tube; **C,** Cantor tube.

LEARNING ACTIVITIES - continued

ACTIVITY #9. Care of the Patient with a Gastric Gavage

Directions: Read the following and study the diagram.

Gastric gavage is used to provide nourishment to the patient who is unable to eat due to loss of appetite, unconsciousness, difficulty in swallowing or obstruction of the esophagus. A tube is passed through the nostril to the stomach by a registered nurse or by a physician.* The tube is then clamped off a few inches from the nose with a vicelike clamp. At regular intervals, the clamp is removed from the tube and a specific amount of nourishment is given. The technique for giving a gastric gavage follows.

Procedure for Gastric Gavage

1. Before you begin a gastric gavage, the position of the tube must ALWAYS BE CHECKED by (a) quickly injecting 10 to 20 cc of air through the tube and listening with a stethoscope for the "swish" sound as it passes into the stomach; (b) inserting the tip of the tube in a glass of water (if bubbles appear, the tube is usually not in the stomach) and must be removed and reinserted.
2. Aspirate the stomach contents. If more than 50 cc is aspirated, report to the R.N. (the feeding may need to be decreased or held). Reinject the aspirated material before proceeding.
3. Place patient in a sitting position if possible.
4. Give the nourishment slowly over a 15 to 30 minute interval, using either a feeding tube bag or a 50 cc syringe.
5. After the feeding is completed, clear the tube with 50 cc water and clamp the tube.
6. Record intake and output.
7. Observe the patient both during and after the feeding for abdominal pain, nausea or vomiting.

*In most hospitals, licensed practical nurses do not insert nasogastric tubes; however, the licensed practical nurse does irrigations, gastric gavages and removal.

ACTIVITY #10. Gastrectomy (Total or Partial)

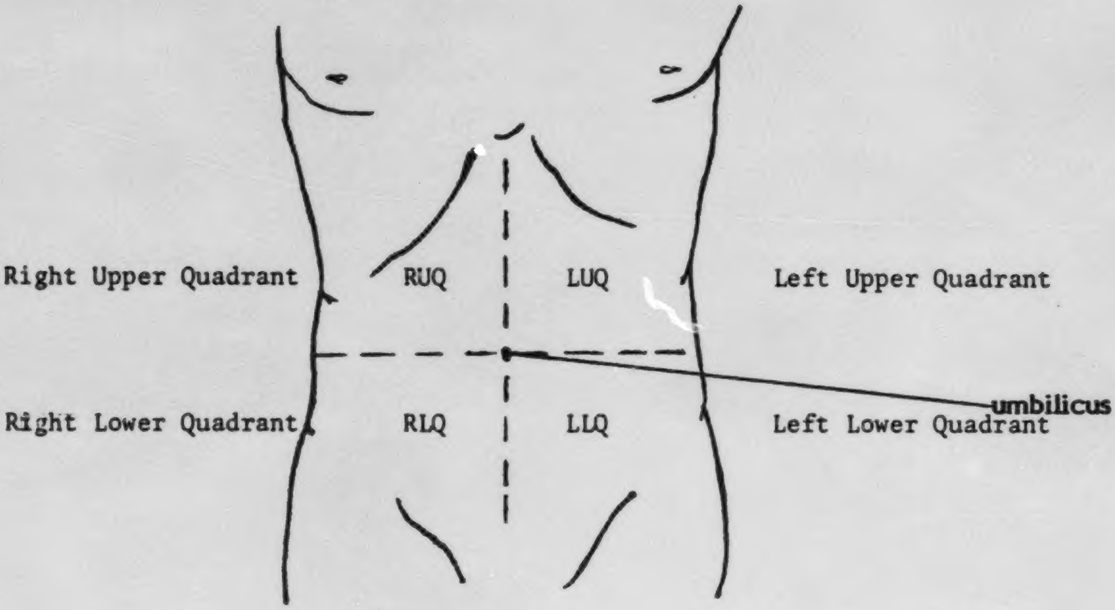
Directions: Read the following information. If you have any questions, ask your instructor for help.

A gastrectomy is performed on patients who have a chronic peptic ulcer or on patients with ulcers that do not improve readily when treated with medication and a special diet. In a total gastrectomy, all of the stomach is removed except the distal tip of the duodenum. The distal tip still allows bile to flow into the small intestine and to mix with the food. In a partial gastrectomy only a section of the stomach is removed. The amount removed depends on the severity and location of the ulcer.

LEARNING ACTIVITIES - continued

Two other surgeries frequently performed at this time are the vagotomy and pyloroplasty. The vagotomy, cutting of the vagus nerve, decreases both the action of the stomach muscles and the amount of the secretions. The pyloroplasty increases the size of the opening from the stomach to the small intestine. Patients who have had a gastrectomy either have a nasogastric tube or gastrostomy tube. The reason for inserting one of these two tubes is to keep the stomach empty (decompressed) until peristalsis begins again. Once peristalsis begins, you will be able to hear bowel sounds, which are the movement of the intestines and the air flowing through them.

Bowel sounds are obtained by placing the patient in a supine position and dividing the abdomen in four quadrants with the umbilicus as the center of the abdomen.



Place your stethoscope over each section. Bowel sounds will be either active, absent or hyperactive and will sound like gurgling. Peristalsis returns after two to three days in most abdominal postoperative patients, therefore, bowel sounds will normally be absent the first 24 hrs. Diarrhea causes the bowels to sound with increased gurgling (hyperactive). Check your patient's bowel sounds as part of your assessment. You may ask the patient if he/she is passing gas rectally. Usually this means that the GI tract is patent and a stool should follow within one to two days.

After bowel sounds are heard, the nasogastric tube is clamped and disconnected from suction. Sometimes it is removed. The patient is then started on a liquid diet and progressed to six small, bland feedings a day. If the patient has a gastrostomy tube, the same procedure is used. Therefore, if the patient becomes nauseated and cannot tolerate liquids, the nasogastric tube or gastrostomy tube can again be connected to suction and irrigate to give the patient relief. It is also reconnected when increasing abdominal distension is present.

LEARNING ACTIVITIES - continued

Now, study the information below for the immediate general postop care of a patient following a gastrectomy. Add any nursing approach and/or rationale that you can think of.

Postop Care of a Patient with a Gastrectomy

Nursing Approach	Rationale
1. Check the dressing frequently.	Check for hemorrhage, but be sure you know if the patient has a drain in the wound before you judge that there is too much drainage.
2. Assist patient to turn, cough and deep breathe every two hours. Move arms and legs.	To prevent stasis of blood and formation of an embolus and to maintain good circulation. To prevent hypostatic pneumonia.
3. Splint the incision by holding a pillow over the abdomen when coughing.	Increase the pressure on the wound, allowing the patient to cough deeper and harder and not fear dehiscence or evisceration.
4. Irrigate nasogastric tube as ordered.	To keep the tube patent and note the color, amount and consistency.
5. Keep careful record of intake and output.	Prevent dehydration and electrolyte imbalance.
6. Special mouth care q. shift.	To prevent ulcerations.

Now, study the information on the next page on the procedure for the irrigation of a nasogastric tube.

LEARNING ACTIVITIES - continued

Irrigation of a Nasogastric Tube

Nursing Approach	Rationale
Nasogastric tubes are irrigated only on the physician's order. This is known as gastric lavage.	Not a routine procedure. Needs an order.
If you are going to irrigate, you would:	
(a) Check tube to see if positioned in the stomach (see procedure for gastric gavage).	(a) You do not want to inject anything (liquid or otherwise) into the trachea.
(b) Clamp tube leading to drainage bottle or disconnect the tube after turning off machine.	(b) If suction is based on vacuum in drainage bottle, air should not be inserted. Machine suction is not used during the irrigation procedure. It is easier to disconnect tubes without pressure of suction.
(c) Use sterile normal saline solution.	(c) Do not introduce unsterile material to open wound or surgical incision in stomach mucosa.
(d) Use sterile 50 cc syringe, slowly inject tube with 30 to 50 cc of solution.	(d) If tube becomes clogged, an irrigation may clear the tube so it can drain properly.
(e) Siphon the stomach contents back, note amount, color, consistency, etc. and discard in basin.	(e) If the amount siphoned out is not the same as amount injected: (1) Record on intake sheet amount injected, amount returned, or (2) If larger amount returned, check with RN about the proper working of suction and record extra amount on output sheet. All of the patient's elimination should be observed for abnormalities and they should be reported if observed.
(f) Record the amount of solution used to irrigate and the returns on the I & O sheet.	(f) Repeated irrigations (if ordered) will dilute any thick secretions or help wash out particles. An equal amount of solution to that instilled should be returned.
(g) Reconnect tube and remove clamp or turn on suction machine.	

LEARNING ACTIVITIES - continued

Nursing Approach	Rationale
Clean the nostrils with warm water or apply Vaseline to nares. (or other water-soluble jelly)	The tube causes drying of nostrils as well as soreness to the area.
Give warm saline mouth wash.	The tube irritates the throat. (The patient should have no oral intake.)
Provide frequent mouth care with lemon and glycerine swabs or Cepacol swabs.	Patient becomes a "mouth-breather" with the insertion of the tube and, therefore, the mouth dries out readily.
Give lip balm.	Again, the tube dries out the lips and mouth.

A gastrostomy is an opening into the stomach to facilitate the administration of food and fluids. In elderly or debilitated patients, it may be used for prolonged nutrition. In the comatose patient a gastrostomy is preferred over a nasogastric tube. In nasogastric feedings, regurgitation may occur but it is unlikely with a gastrostomy tube.

Any impermeable stricture of the esophagus or destruction of the esophageal mucosa may make the gastrostomy permanent. An esophageal stricture may be due to scar tissue and may occur as a result of lye burns or a carcinoma growth.

ACTIVITY #11. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. A patient with a hiatus hernia will complain of pain when he/she

   a. ______________________________

   b. ______________________________

   c. ______________________________

2. A patient with a hiatus hernia should remain in semi-Fowler's position because

   ____

LEARNING ACTIVITIES - continued

3. The best way to prevent gastritis is to ______________________________ .

4. The procedure performed to diagnose chronic gastritis is ______________

____ .

5. The dietary restrictions placed on a person with gastritis include __________

____ .

6. All peptic ulcers are located in the stomach. TRUE FALSE

7. The reason why a patient with a peptic ulcer should have frequent feedings is

____

8. Alcohol affects the stomach by ______________________________ .

9. The purpose of a gastric gavage is to ______________________________ .

10. You can check the position of the gastric tube by:

a. ____

b. ____

11. The reason why 50 cc of water is instilled into the gavage tube is __________

____ .

12. The purpose of a Levin tube is to ______________________________ .

13. Name other nasogastric tubes and their function.

a. ____

b. ____

c. ____

14. The advantage of a gastrostomy tube versus a Levin tube after a patient has had a gastrectomy is that a gastrostomy tube:

____

LEARNING ACTIVITIES - continued

15. You can relieve the irritation that the Levin tube may cause in the nose, throat and mouth by:

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

16. If any drainage shows on the dressing of an abdominal wound, notify the physician immediately. TRUE FALSE

17. Bowel sounds are checked by ascultating two quadrants of the abdomen. TRUE FALSE

ACTIVITY #12. The Intestines

Directions: Read the following information and complete the exercise that follows.

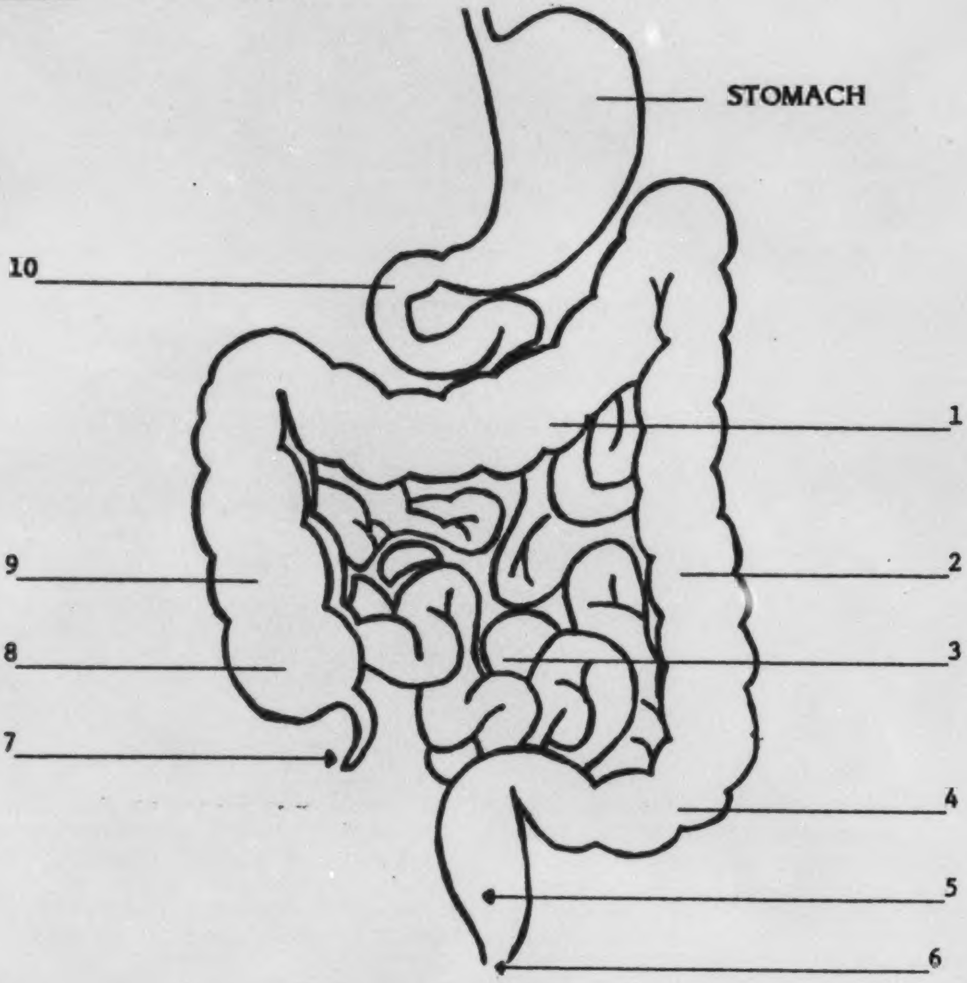
The small intestine is approximately 20 feet long and begins at the pyloric sphincter and ends at the ileocecal valve. It consists of three parts: the duodenum, the jejunum and the ileum. Many enzymes are secreted by the glands of the small intestine. The small intestine also receives secretions from the liver and the pancreas. These secretions help to digest proteins and carbohydrates and emulsify (or breakdown) fats. Simple sugars are readily absorbed through the intestinal wall as are small amounts of salts and water. Everything else travels by peristalsis to the large intestine.

The four main parts of the large intestine are: the cecum, the colon, the rectum and the anal canal. The main functions of the large intestine are to absorb water and form feces, to house bacteria that synthesize vitamin K and to produce some compounds of vitamin B that can then be absorbed by the body.

Refer to Unit 4, Module D for a detailed review of anatomy and physiology.

LEARNING ACTIVITIES - continued

Directions: Label the parts of the intestines.



ACTIVITY #13. Diagnostic Tests Used to Determine Intestinal Diseases or Conditions

Directions: Read the following information.

Barium Enema

This x-ray procedure makes it possible to observe polyps, lesions, tumors or other anatomical changes in the large bowel.

Preparations, Procedure, and Postprocedure

1. Preparation

    a. Explain the procedure to the patient.

LEARNING ACTIVITIES - continued

b. Cathartic the afternoon or evening before the procedure.

c. Sometimes a special low-residue meal is allowed the evening before the procedure.

d. NPO at midnight.

e. Tap-water enemas are given until clear returns appear. Usually no more than three enemas are given the morning of the x-ray.

2. Procedure

   a. A barium solution enema is given.

   b. The patient must "hold it" until all the x-rays are taken. An instrument with a bulb may be inserted into the rectum and the bulb is pumped up to aid the patient in retaining the barium by blocking the anal opening.

3. Postprocedure

   a. Patient may eat breakfast.

   b. Physician may order a cathartic or an oil-retention enema to help patient to expel the barium and prevent constipation.

   c. Rest. Enemas tire a patient out!!

NOTE: If the doctor has ordered a stool specimen to be obtained, check with the policy and procedure manual on how long you must wait after a barium enema has been given. The barium will alter the analysis.

Sigmoidoscopy or Proctoscopy

This procedure provides a direct view of the mucous lining of the anus, the rectum and sigmoid colon. A biopsy may be performed at this time.

Preparations, Procedure, and Postprocedure

1. Preparation

   a. Explain the procedure to the patient.

   b. A suppository, a fleets enema or a cleansing enema (until clear returns appear) will be ordered by the physician for the morning of the test to clear the sigmoid of feces.

   c. Some hospitals require a signed permit.

   d. If the procedure is to be done on the unit, it is the responsibility of the nurse to check all equipment, such as lights and suction machines, to be sure that they are working properly.

LEARNING ACTIVITIES - continued

2. Procedure

   a. Patient lies on a bed or exam table in a knee-chest or Sim's position.

   b. Physician examines the rectum by inserting a gloved index finger.

   c. Next the proctoscope is inserted into the rectum up to ten inches (VERY UNCOMFORTABLE!!)

3. Postprocedure

   a. Return the patient to bed by wheelchair.

   b. Rest (just holding the knee-chest position is very tiring).

   c. Offer food and fluids, especially if more than one enema was given.

Stool Specimen

Stool specimens are collected and examined for most GI disturbances. It is very important for the nurse to be aware of the special preparations that are necessary both before and after specific stool specimens are collected. It is also important that the nurse remember that specimens cannot be collected after a soapsuds or fleets enema has been given because both alter the consistency of the stool.

Procedure

The following are two types of stool specimens. It is important to follow the procedure carefully or the results will not be accurate.

1. Stools tested for microorganisms - after the specimen is collected it must be sent to the lab for immediate evaluation while they are still warm or the microorganisms will not be evident. A culture is done.

2. If stools are tested for occult (hidden) blood - the patient should have a meat-free diet for 24 hours before the specimen is collected or the results will automatically be positive.

Review Unit 8, Module D-5 on the procedure for collecting stool specimens.

__Directions:__ Answer the following questions by filling in the blanks or by circling "true" or "false."

1. The purpose of a barium enema is to ______________________________ .

2. The procedure that makes it possible to see the lining of the rectum is the ____________________.

3. List two procedures in which enemas are used to prepare the patient.

   a. ____

   b. ____

LEARNING ACTIVITIES - continued

4. A biopsy of a polyp may be taken while a(n) ________________ is being performed.

5. If a patient cannot produce a stool specimen, an enema may be ordered, and then a specimen collected. TRUE FALSE

6. A patient is NPO for a proctoscopy. TRUE FALSE

ACTIVITY #14. Enteritis and Colitis

Directions: Read the following information.

The causes, symptoms and care of the two diseases, enteritis and colitis, are similar. The major difference is that enteritis affects the small intestine and colitis affects the colon. It is important to keep this difference in mind. The true cause for either disease has not been proven, but infection, psychological disturbance or autoimmune response (body rejection of its own parts) seem to be the most widely accepted probable causes. Both diseases usually affect patients between the ages of 20 to 30 years.

Enteritis and colitis cause an inflammation of the intestine, which causes the mucosa to become edematous, thickened and to contain superficial bleeding points. With each "attack," the bleeding points become larger until they become ulcers that either bleed excessively or perforate the bowel. Scar tissue is formed where the ulcerated mucosa exists and the intestine loses its elasticity and absorption qualities.

With these anatomical changes, it is no wonder that the patient shows the signs and the symptoms outlined below.

Enteritis	Colitis
1. Severe abdominal cramping in the right lower quadrant.	1. May have abdominal cramping before bowel movement.
2. Moderate fever.	2. Low-grade fever.
3. Mild diarrhea (3 to 4 stools a day containing blood, pus and mucous).	3. Up to 20 loose, watery stools a day containing blood, pus and mucous.
4. Weight loss.	4. Weight loss.
5. Occasional nausea and vomiting.	5. Occasional nausea and vomiting.

LEARNING ACTIVITIES - continued

Read the following nursing care plan for a patient with colitis. Make any additions to the nursing approach and/or rationale that you can think of.

Patient Problem	Nursing Approach	Rationale
Apprehensive	Explain all procedures before they are performed.	Helps decrease anxiety.
	Let patient make decisions such as time of bath and the foods to be avoided.	The patient will be more secure if he/she can make decisions about personal care.
	Allow verbalization of fears.	
Underweight	Increase protein and calories. Reduced residue and bland diet.	
	Encourage patient to eat as much as possible.	Will probably not eat unless encouraged.
	Provide between meal nourishment high in protein such as eggnog and milk shakes.	Weight should return to normal and protein helps to heal intestines.
Diarrhea. Patient uses bedpan or commode frequently.	Have dietician talk about foods to avoid.	Frequently certain foods will irritate the bowel. Food tolerance is different for each person.
	Observe all stools for size, color and consistency.	This is one way of telling how the patient is progressing.
	Have bedpan or commode always close by (even in bed).	Patient needs the security of knowing that the bedpan is within reach. It will decrease anxiety about soiling the linen.

LEARNING ACTIVITIES - continued

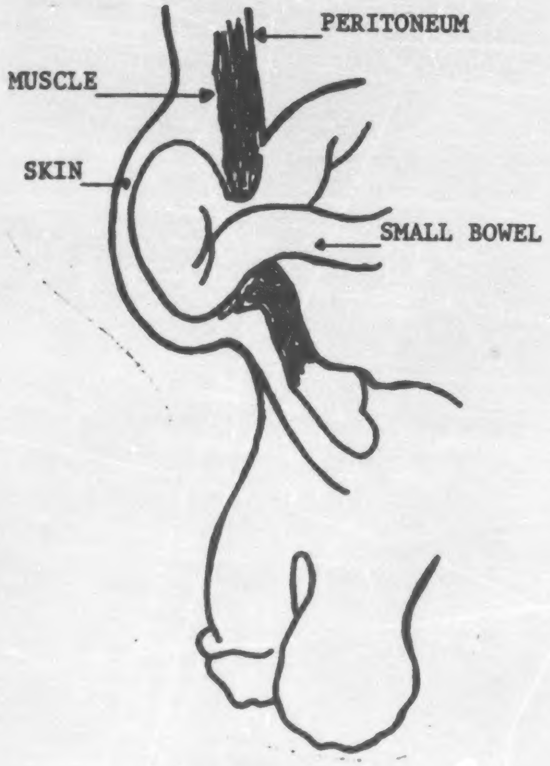
Patient Problem	Nursing Approach	Rationale
Skin breakdown from frequent diarrhea.	Give peri-care after every stool.	Stool left on the perineum will cause much irritation.
	Sitz baths if able to tolerate the activity.	Increased circulation to the area will decrease skin breakdown. Also, the bath gives a soothing effect.
	Apply medicated ointment to the anus.	Soothing. Promotes healing.
	Pad the bedpan with foam rubber or towels.	Patient's thin and boney projections could rub on bedpan and cause skin breakdown.
Odor in room from stools.	Obtain room deodorizer.	Makes the room more pleasant and odor-free for the patient and for the visitors.
	Empty and clean the bedpan after each bowel movement.	
	Good ventilation without creating a draft.	

If either condition becomes chronic and medical care does not seem to decrease the symptoms, an ileostomy will be performed. This surgery and the patient care will be covered in Activity #19 when colostomy care is discussed.

LEARNING ACTIVITIES - continued

ACTIVITY #15. Hernias

Directions: Read the following information.



INGUINAL HERNIA

An increase in pressure in the abdomen caused by overexertion, chronic coughing, or incorrectly lifting very heavy objects (poor body mechanics) can cause the intestines to be forced through the abdominal wall and into the scrotum (occasionally women can have inguinal hernias in the labia). The patient notices a lump that is moveable and sometimes experiences much pain in the area.

Nursing Care Postop

The only cure for a hernia is surgery called herniorrhaphy. If surgery is not done, the opening in the muscle can become narrowed causing a stricture in the intestine that could lead to gangrene and rupture of the small bowel. Peritonitis may occur and endanger the patient's life. It requires immediate surgery. The nursing care for such surgery includes making postop observations and preventing complications. The most common patient problem is excessive stress on newly repaired tissues. Stress, along with congenital weakness, was the cause of the hernia in the first place, so you have to try to decrease the stress on the suture lines postop. Here are some suggestions on how to do this.

1. Instruct the patient to splint his wound with his hands or a pillow when deep breathing and/or coughing.
2. Notify the physician if the patient shows signs of a cough or of a respiratory infection so that medications may be ordered to relieve such signs.
3. Accurately measure and record voiding and do not hesitate to catheterize the patient if the physician has ordered the procedure so that the bladder does not become distended and put pressure on the incision.
4. A scrotal support and/or jockey strap will help to support the usually swollen, tender scrotum. Part of your assessment with a herniorrhaphy is to check for ecchymosis of the scrotum.

LEARNING ACTIVITIES - continued

5. Instruct the patient to roll on his side and to push with his hands to get out of bed rather than using all of his abdominal muscles in sitting straight up.
6. The patient can usually have a diet as tolerated (DAT) as soon as he is awake and alert, and he can probably ambulate to the bathroom the night of surgery.

Care of a patient with an umbilical or an incisional hernia is mostly routine postop care. Consult your textbook Total Patient Care, Chapter 16 and Taber's Cyclopedic Medical Dicationary for the differences between these and then write the definitions for the following terms.

Femoral hernia: ____

____

____

Incisional hernia: _______________________________________

____

____

Umbilical hernia: _______________________________________

____

____

Ventral hernia: ____

____

____

ACTIVITY #16. Appendicitis

Directions: Read the following.

Appendicitis is an inflammation of the vermiform appendix that projects out of the cecum. Several theories indicate that this inflammation is usually caused by hardened feces, a foreign object or a kinked appendix that cuts off the blood supply to the rest of the appendix and causes it to be more susceptible to infection and even necrosis.

The main problem is not the appendicitis itself but rather the peritonitis (read Activity #17 for more detail on peritonitis) that can develop if the person does not seek medical help promptly or if the person becomes his own doctor and takes a cathartic or enema that could rupture the appendix.

LEARNING ACTIVITIES - continued

Signs and Symptoms

The nurse must be aware of the signs and symptoms of appendicitis not only to care for the patient in the hospital but also to educate people in the community.

1. Sudden pain around the umbilicus and mostly in the right lower quadrant of the abdomen.
2. Anorexia, nausea and vomiting.
3. Moderate temperature (100°). } indicates infection
4. Elevated leukocytes (WBC). }

Anyone with these symptoms should not receive a cathartic or an enema. In the hospital, they are usually made NPO and receive IV therapy with electrolyte replacement. The physician may seem cruel by not ordering pain medication, but since so many diseases (salpingitis and enteritis) produce these same symptoms, the physician must observe the patient before making a definite diagnosis. Once the diagnosis is made, an emergency appendectomy is always performed.

Postop Care

Postop care is mainly routine; patients are ambulatory within twelve hours of surgery and resume a regular diet within two to three days. Remember to keep the patient moving, deep breathing and coughing.

Postop Complications

The most frequent postop complications are abcess formation and peritonitis. If these conditions are evident in surgery, the physician will insert penrose drains into the wound so that the purulent material will drain out and not be trapped within the abdominal cavity. This may occur with a ruptured appendix. If the wound has to be opened to let the drainage out; then, warm sterile saline compresses and an Aqua pak are usually applied to the wound.

ACTIVITY #17. Intestinal Obstruction

Directions: Read the following information.

As the name indicates, an intestinal obstruction is the result of the intestinal contents not passing through the bowel. There are many causes for an obstruction. For our purposes, they will be categorized as mechanical and neurogenic.

1. Mechanical obstruction: Caused by adhesions, twisting of the bowel and cancerous tumors.
2. Neurogenic obstruction: Peristalsis stops because of interference with nerve pathways to the bowel. Causes include handling of the bowels in surgery, electrolyte imbalance and a complication of peritonitis.

LEARNING ACTIVITIES - continued

Signs and Symptoms

The portion of the intestines above the obstruction becomes edematous, peristalsis becomes more forceful and the mucosa can no longer absorb water. Therefore, the patient experiences distention, severe abdominal cramping and signs of electrolyte imbalance. If this should be allowed to continue, reverse peristalsis begins and the patient will vomit fecal material. The condition is extremely serious and medical attention must be sought immediately or the patient could die within a few hours.

Medical treatment includes:

1. Passing a tube through the nostril and into the colon and connecting it to suction (Miller-Abbott tube) to decompress the intestine.
2. IV therapy with electrolyte replacement.
3. Rectal tube to relieve gas pressure.
4. A high-residue, low-roughage diet.
5. Medications such as antispasmodics and fecal softeners.
6. Depending on the severity of the disorder, surgery is done to remove the cause of obstruction, such as a tumor or adhesions.

Nursing Care

Nursing care is outlined below. Think!! Fill in the rationale for each nursing approach. Remember, an LPN does not just do, but UNDERSTANDS what needs to be done and knows why he/she does each approach.

Patient Problem	Nursing Approach	Rationale
Difficulty breathing because of distended abdomen.	Keep patient in semi-Fowler's position. Encourage patient to breathe through the mouth. Insert rectal tube.	
Exhausted physically and emotionally.	Assist with turning and with other activities of daily living. Make sure that all tubes are patent and functioning well and reassure the patient that they will help him/her get well.	

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Foul breath from vomitting.	Frequent mouth care with lemon and glycerine swabs and water or mouthwash.	

Observations to be ALERT for include:

1. Elevated temperature (may be first sign of peritonitis).
2. Decreased output (distended bowel could be pressing on bladder). Report any total 24-hour urinary output below 500 cc.
3. Be sure decompression tube and suction machine are functioning properly.
4. Flatulence is usually a sign of peristalsis.

ACTIVITY #18. Peritonitis

Directions: Read the following information.

Peritonitis is an inflammation of the periotoneum (serous membrane that lines the abdominal cavity). This inflammation is usually caused by the contents of an abdominal organ invading the abdominal cavity. The organ may rupture because of disease (perforated peptic ulcer or ruptured appendix) or because of trauma (ruptured spleen, ruptured pancreas due to a car accident, or a ruptured fallopian tube in tubular pregnancies).

Signs and Symptoms

Signs and symptoms of peritonitis are very similar to those of intestinal obstruction.

1. Large amounts of fluid containing electrolytes accumulating in the abdominal cavity leading to:
    a. Electrolyte imbalance, disorientation.
    b. Dehydration, dry skin, poor skin turgor, increase in temperature.
    c. Shock, decreased blood pressure, increased pulse, anxiety and pallor.
2. No peristalsis.
3. Distended, rigid abdomen.
4. Severe pain in the abdomen.
5. Nausea and vomiting.

LEARNING ACTIVITIES - continued

Nursing Care

Since the symptoms of peritonitis are similar to those of an abdominal obstruction, the care will also be the same. However, this inflammation turns into an infection within a few hours after the organ has ruptured. Therefore, the emphasis is placed on IV care with antibiotic therapy and on keeping the patient in a semi-Fowler's position to localize the infection and the purulent material in the abdomen. This is a very serious condition, sometimes fatal, and the nurse who cares for a patient with peritonitis needs to be alert AT ALL TIMES!! The patient should be placed on wound and skin isolation.

ACTIVITY #19. Ileostomy and Colostomy

Directions: Read the following information.

An ileostomy is a surgically formed opening in the ileum made through the right side of the abdominal wall for the drainage of fecal matter. This surgery is usually performed on patients with chronic ulcerative colitis or enteritis.

A colostomy is a surgically formed opening in the colon through the left side of the abdominal wall for the drainage of fecal matter. This surgery may be necessitated by cancer of the bowel, intestinal obstruction or trauma such as a gunshot wound in the abdomen. A colostomy is not always permanent. A temporary colostomy may be performed to give the affected bowel time to rest and to recuperate after a bowel perforation or an infection. This usually takes 6-12 weeks. After the physician is sure that the bowel has healed, the two ends of the bowel will be reconnected and the abdomen closed. The most common reason for a permanent colostomy is cancer of the rectum. In such cases, an abdominoperineal resection is performed.

Differences between Ileostomy and Colostomy

Ileostomy	Colostomy
1. Ileum is brought to the right abdominal wall.	1. Colon is usually brought to the left abdominal wall.
2. Liquid drainage. (Stool may become more formed after six months to a year.)	2. Stool more formed.
3. Drainage contains enzymes that could break down the skin around the stoma.	3. Less danger of skin breakdown.

Immediate Postoperative Care for the Patient with an Ileostomy or Colostomy

The principles of postoperative care are the same as those for any patient who has had surgery on the gastrointestinal tract. The use of a nasogastric tube with suction and the administration of parenteral fluids are usual in the immediate postoperative period. Within several days, these treatments are generally discontinued and oral feedings of easily digested foods are begun. The patient is encouraged to resume a

LEARNING ACTIVITIES - continued

normal diet excluding only those foods that cause the most flatus or diarrhea. In most large hospitals, an ostomy clinician can help the patient and family understand and work with the ostomy. The ostomy clinician is a registered nurse who is specially trained in ostomy therapy. However, you should be aware of how to care for the ostomy patient in case the clinician is unavailable.

Keeping the patient clean: At first, the stoma constantly exudes soft or liquid feces. Frequent changing of the dressing or frequent emptying of the plastic bag is necessary, day and night, to keep the patient as clean as possible, to reduce leaking and to prevent excoriation of the skin around the stoma. Clean rather than sterile technique is used because the opening is into the bowel, which normally contains many bacteria, and because the fecal drainage is laden with bacteria.

Wash your hands carefully before and after changing the dressing. Collect all the needed equipment first so you will not have to obtain supplies from cupboards or the dressing cart while the dressing change is in progress. If you should require additional supplies, wash your hands thoroughly before leaving the patient's unit.

It is convenient to keep all necessary supplies at the patient's bedside, replenishing them as needed. The supplies include newspapers or plastic bags for wrapping soiled dressings, extra dressings or plastic colostomy bags, Montgomery straps and any medication for the patient's skin.

Remove the plastic colostomy bag or the soiled dressings and dispose of them in newspapers or plastic bags. Gently wash the skin around the stoma with mild soap and warm water. Gauze fluff usually is used for cleansing. If the skin is inflamed, use water without any soap. Wash gently and thoroughly. Since the skin is very easily irritated, avoid any rubbing.

Work neatly. Avoid leaving soiled articles within the patient's view. Wrapping the soiled dressings in newspaper as soon as they are removed helps to control odor as well as to make the entire procedure more acceptable to the patient. The odor of intestinal gas and feces can be controlled by diet, personal hygiene and use of sealed odorproof bags. Provide adequate ventilation, but do not chill the patient.

Various preparations may be ordered by the physician to treat or to prevent excoriation of the skin. Petrolatum gauze, aluminum powder or paste, karaya powder and aluminum hydroxide gel (Amphojel) commonly are applied to the skin around the stoma. Whatever preparation is used, it must be removed periodically in order to observe the condition of the skin underneath.

Apply the plastic colostomy bag snugly to minimize leakage. The adhesive that holds the bag against the skin will not stick unless the skin is clean and dry. Apply the bag with the adhesive side down. Apply it smoothly, avoiding any wrinkles. If the patient is ambulatory, the plastic bag may be supported and held more securely in place by an elastic belt made especially for this purpose. If a dressing is used, circling the stoma with rings of gauze before applying the dressing over the stoma itself helps to avoid leakage.

LEARNING ACTIVITIES - continued

Change everything that is soiled including the gown and the bedding. A soiled Montgomery strap left in place may cause the patient to feel dirty and cause odors.

Try to change the dressing at least a half-hour or so before meals. Changing it too close to mealtime or serving the tray when the dressing is soiled may interfere with the patient's appetite.

Teaching the Patient to Change the Dressing

The patient's reaction will guide you in helping the patient to learn to change his/her own dressing. You may notice that the patient does not look at the stoma the first few times the dressing is changed. Many patients look away or they cover their eyes with an arm as they lie quietly in bed. It is better not to force such a patient to look with a comment like, "You had better watch what I'm doing because soon you will be doing this yourself." Instead, carry out the dressing deftly and promptly, doing everything in a way that makes the procedure as smooth as possible. Be especially careful to insure privacy. Many patients dread having the stoma and the drainage exposed, even to the nurse's view, and they become very distressed if other patients or visitors see it. Make a special effort to show the patient that his/her feelings are acceptable. Keep everything in the unit spotlessly clean and neat so visitors will not be repelled by odors or by soiled equipment. Having members of the staff and convalescent patients drop by often for a chat helps the patient to feel that the stoma does not make others avoid him/her.

Give the patient opportunities to express feelings about the stoma. Often a patient, who appeared brave and eager to learn before surgery, becomes depressed and withdrawn after the operation. Usually, if those who care for the patient show patience and support, the patient will begin to look at the stoma and to show an interest in its care. Sometimes, a casual and yet factual comment such as "The drainage is more formed today," helps the patient to begin observing the care of the stoma. If the patient continues to avoid looking at it or discussing it, the physician should be consulted. It may be necessary to provide emotional support or counseling.

As soon as the patient begins to observe and to show interest when you change the dressing, explain each step as you proceed. After observing several times, let the patient help by holding the equipment and by handing you supplies as you need them. Give the patient an opportunity to wash after helping with the dressing. Too often this important detail is forgotten although it is taken for granted that the nurse will wash her/his hands.

When the patient has helped a few times and is regaining strength after the operation, he/she is usually ready to carry out the procedure alone. Stay in the room the first few times, showing and helping as needed. If the patient carries out the procedure correctly the first or the second time, it may be assumed that he/she no longer needs help. Often, the patient has the feeling that the nurse is delighted to be rid of the task. Whether or not the patient can carry out the technique adequately, arrange to be present occasionally when the dressing is changed. You will be able to observe if the patient is continuing to apply what has been learned as well as to note the condition of the skin, the type and the amount of fecal drainage. It will also assure the patient of your continued interest and to make the patient feel that the procedure itself is not something to be shunned.

LEARNING ACTIVITIES - continued

Colostomy Irrigation

A NURSE MUST NEVER IRRIGATE AN ILEOSTOMY. Patients with a colostomy often give themselves daily irrigations to establish evacuation at a regular time each day. Some patients continue to require a daily irrigation to empty the bowels and to avoid fecal drainage at other times of the day. Others, especially those with a sigmoid colostomy, find that regular evacuation can later be carried out without irrigation, and that no leakage of feces occurs between evacuations. The irrigation should be done at the same time each day, preferably at a time when the patient can conveniently do it at home. If the time is carefully chosen, the schedule of evacuation established in the hospital will not have to be changed when the patient goes home. Also, if the irrigation is done properly, the patient can eventually wear a small dressing over the stoma and not a bag.

ACTIVITY #20. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. Enteritis causes what changes in the mucosa of the intestines?

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

2. Symptoms of enteritis are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

3. Symptoms of colitis are:

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

LEARNING ACTIVITIES - continued

4. A patient with colitis should have a diet high in protein because ______________________________.

5. Sitz baths must be ordered by a physician. TRUE FALSE

6. A general definition of a hernia is ______________________________.

7. Surgery is only performed on a hernia when it is not cured by medicine or diet.
TRUE FALSE

8. A distended bladder could put pressure on the suture line of a herniorrhaphy.
TRUE FALSE

9. The appendix is located on the ______________ side.

10. The lab test ordered for a patient with possible appendicitis is __________.

11. The purpose of a penrose drain is to ______________________________.

12. Symptoms of an intestinal obstruction are:

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

13. In serious cases of bowel obstruction, the patient may vomit fecal material.
TRUE FALSE

14. The purpose of inserting a Miller-Abbott tube into the colon is to ______________________________.

15. List two causes of peritonitis.

    a. ______________________________

    b. ______________________________

16. Flatulence is a sign of ______________________________.

17. List two reasons why a patient may have to have a colostomy.

    a. ______________________________

    b. ______________________________

LEARNING ACTIVITIES - continued

18. Why does a colostomy drain a more formed stool than an ileostomy? ______________

____

19. Is the dressing change of a stoma a clean or sterile technique? ______________

20. Why did you pick the answer you did for question #19? ______________

____

21. What are the four important things to remember when performing a dressing change on a stoma?

    a. ______________________________________

    b. ______________________________________

    c. ______________________________________

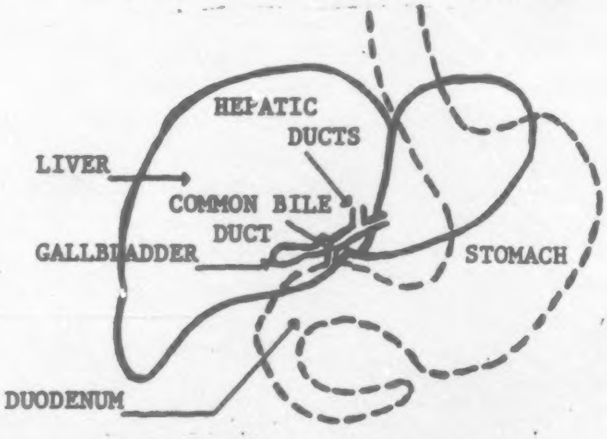
    d. ______________________________________

22. A colostomy should be irrigated every morning before the patient goes to work.
    TRUE FALSE

23. If the irrigation is properly performed, a dressing may be worn over the stoma.
    TRUE FALSE

ACTIVITY #21. Anatomy and Physiology of the Liver, the Gallbladder and the Pancreas

Directions: Identify the liver, the gallbladder and their ducts in the following diagram, then read the following information.



(The duct from the gallbladder and the hepatic ducts join to form the common bile duct that empties in the duodenum.)

The largest gland in the body is the liver. It consists of four lobes; three are located in the far right upper quadrant of the abdomen and the fourth is located in the right epigastric region.

More important than the anatomy of the liver is its function!!!

Functions of the Liver

1. Produces bile (which act to break down and emulsify fats).
2. Produces prothrombin and fibrinogen (proteins needed for clotting of blood).

LEARNING ACTIVITIES - continued

3. Destroys erythrocytes (RBC).

4. Breaks down glucose, glycogen and amino acids.

5. Stores glycogen, amino acids and vitamins A, B complex and D.

6. Detoxifies harmful substances (e.g. converts drugs into harmless substances).

Location and Function of the Gallbladder

The gallbladder is a saclike organ that lies behind the liver. It removes the water from the bile so that it is more concentrated and then stores it. If the bile becomes supersaturated and begins to precipitate, gallstones will be formed.

Location and Function of the Pancreas

The pancreas is a long, carrot-shaped gland that lies below the stomach. It produces enzymes that help to digest fats and proteins. Since these enzymes pass through ducts to the duodenum, it is an exocrine gland. It has other functions that will be emphasized in the unit on the endocrine glands.

ACTIVITY #22. Diagnostic Tests Performed to Help Confirm Liver or Gallbladder Diseases

Directions: Read the following information on blood tests used to diagnose liver or gallbladder problems.

Blood Tests for Liver Diseases

1. Serum bilirubin: Bilirubin is the leftover product of hemoglobin breakdown in the liver. If this chemical is elevated in the blood, there is an obstruction somewhere within the hepatic or the biliary ducts. The patient is usually npo at midnight until the blood is drawn.

2. Serum enzymes: SGOT, SGPT and LDH (found in Module 17-B) are the serum enzymes that will be elevated in hepatic diseases since they are released when the liver cells are injured. The patient is npo at midnight until the blood is drawn.

3. BSP: One of the ways to test the functioning of the liver is to inject a dye into the bloodstream that is excreted by the liver. BSP (Bromsulfalien) is the dye used. The patient must be npo for six hours before the test. The patient receives a certain amount of the dye, BSP, injected IV into one arm, and 45 minutes later, a blood sample is taken from the other arm. All but about 5% of the dye should have been removed from the bloodstream in 45 minutes. Abnormal readings indicate liver damage.

LEARNING ACTIVITIES - continued

Liver Biopsy

Preparation, Procedure, and Postprocedure

1. Preparation
    a. Explain the procedure to the patient.
    b. Obtain a signed permit for this procedure.
    c. Prothrombin time (clotting time of the blood) must be 40% or above. Be sure that the physician has the results before beginning the procedure. It may help to reduce the risk of internal hemorrhage.
2. Procedure
    a. Patient lies on the left side or back in bed (procedure is performed in the patient's room).
    b. Area is locally anesthetized.
    c. Small incision is made, usually between the eighth or ninth rib spaces. If a needle biopsy is being performed, an incision may not be necessary.
    d. The patient must then hold his/her breath while a needle specially made for snipping off tissue is introduced into the liver.
3. Postprocedure
    a. Patient should lie on the right side with a folded bath blanket over the biopsy site providing pressure and splint the area.
    b. Vital signs are taken every 1/2 hour for two hours and then, once an hour for 24 hours. Patient must be watched closely for signs of internal bleeding.
    c. Patient must remain flat for a specified length of time ordered by the physician (6 to 12 hours).
    d. Patient may have a general diet.

Cholecystography (GB Series)

This is an x-ray examination that diagnoses diseases of the liver, the gallbladder and the biliary ducts.

1. Preparation
    a. Explain the procedure to the patient.

LEARNING ACTIVITIES - continued

b. Priodox, Bilopaque or Telepaque tablets are given around 1800 the night before the GB series is done or as the procedure specifies at your hospital. Should be taken one at a time with several glasses of water.

c. Low-fat supper is eaten the night before the x-ray. Then NPO. (If much fat is eaten, the gallbladder contracts and expells the bile and the dye along with it.)

2. Procedure

Simple x-rays are taken.

3. Postprocedure

a. Patient may have a general diet or the special diet he has been on previously.

b. Observe for burning on urination while dye is excreted.

ACTIVITY #23. Hepatitis

Directions: Read the following information.

Hepatitis is any inflammation of the liver caused by viruses, bacteria, drugs or other chemicals. This inflammation actually causes the working cells of the liver to necrose (die). Since the liver is capable of regenerating itself, in time, it will replace the dead tissue.

Viral hepatitis is the most common type of hepatitis. It is caused by two distinct but similar viruses that produce almost identical symptoms but, that vary in their incubation period and mode of transmission. These viruses are known as:

"A" - short incubation virus = infectious hepatitis
(10-40 days)

"B" - long incubation virus = serum hepatitis
(2-6 months)

There are two major ways of contracting viral hepatitis. One way is by introducing contaminated feces, water or food into the mouth. Measures that should be taken to prevent the spread of infectious hepatitis include thorough handwashing by the patient (especially after having a bowel movement) and by the nurse (especially after handling the patient's linen or bedpan) and by anyone who works around food products for the patient. This is also known as the 3 F's (finger, food and feces). The second way of contracting viral hepatitis is by contact with contaminated parenteral equipment and contaminated blood.

Another type of hepatitis is serum hepatitis. The virus of this type is found predominantly in the blood serum or plasma and is most commonly contracted by receiving an injection with a contaminated needle or by receiving a blood transfusion that is contaminated. Preventative measures include always using a sterile, disposable needle and syringe for each patient.

LEARNING ACTIVITIES - continued

Signs and Symptoms

With any type of hepatitis, "bile backs up" into the blood system since the normal hepatic duct system cannot excrete the bile because of tissue necrosis and swelling. This "backup" leads to:

1. Jaundice - yellowish color to skin, sclera and mucous membrane.
2. Brown-colored urine.
3. Clay-colored stools.
4. Bile in perspiration.
5. Pruritis.

In the acute stage of hepatitis, the patient may experience:

1. Headache.
2. Anorexia, nausea and vomiting.
3. Chills and an elevated temperature (100°-104° F).
4. Malaise (general discomfort).
5. Abdominal pain with tenderness over the liver.
6. General itching (bile from perspiration collecting on the skin and irritating it).
7. Photophobia.

Diagnosis

Diagnosis is based on symtoms, liver function tests and liver biopsy, with prothrombin and clotting time tests preceding the biopsy.

Treatment

Medical care is limited and vague. Usually, the patient is in isolation and on bedrest until the severe symptoms subside. If the patient is nauseated and unable to eat, IV's may be ordered. When foods and fluids can be tolerated, the patient should drink 3000 cc of liquid a day and the diet should be high in carbohydrates, proteins and vitamins.

Nursing Care

1. Isolation (Review procedure in your unit procedure manual)
    a. When in contact with patient or wastes, wear gown and gloves.

LEARNING ACTIVITIES - continued

   b. Explain isolation technique (procedures) to patient and family.

   c. Disposable utensils and dishes used and disposed of properly (double bag - discard).

   d. All linen and trash double-bagged.

   e. Disposable thermometer kept in patient's room. Discard when patient is discharged.

   f. Dispose of feces carefully in toilet.

   g. All needles, syringes or other materials used to puncture skin should be safely discarded in a box in the room.

2. Observe patient for mental depression.

3. As jaundice disappears, increase ambulation.

4. To relieve itching caused by increased bilirubin, bathe (avoid soap) with warm water, lotions and medicate with antipruritic medications as ordered.

5. Frequent oral care (at least twice daily).

6. Offer between-meal nourishments.

7. Reduce light in room if patient complains of photophobia.

8. Take daily weight before breakfast.

9. Review and explain transmission of disease (reason for isolation).

10. Provide hard candy and fruit at the bedside. The liver stores the breakdown products of sugars, therefore, the patient needs a diet high in carbohydrates to return to normal.

11. Occupational therapy if patient becomes bored and restless in bed.

12. Observe, report and record color of urine and stools to the patient's physician.

ACTIVITY #24. Cirrhosis

Directions: Read the following.

Cirrhosis of the liver is actually a group of diseases. There are three changes that occur within the liver:

1. Tissue is destroyed.

LEARNING ACTIVITIES - continued

2. Tissue is unable to reproduce itself properly.

3. Tissue is replaced with fibrous material.

Signs and Symptoms

Cirrhosis of the liver has many causes, from congestive heart failure to chronic viral hepatitis, but the most common cause is malnutrition. Many alcoholics develop cirrhosis not necessarily because of alcohol but because of their poor eating habits.

Depending on what caused the disease in the first place, the liver might be enlarged or might decrease in size, might be firm or soft, or it might become tender or have no sensations at all.

The patient is usually in general poor physical health; anemic, thin and complaining of fatigue, G.I. upset, memory loss and slight elevation of temperature.

Nursing Care

Medical and nursing care is directed toward preventing further damage to the liver and relieving the more uncomfortable symptoms of the disease. Key points in the patient care are diet and rest. A dietary care plan for a patient with cirrhosis is provided below. In the spaces provided, give examples of a nutrient for each group.

Patient Problem	Nursing Approach	Rationale
Malnourished	Increase carbohydrates. Give examples of foods high in carbohydrates: 1. ____________ 2. ____________ 3. ____________	Provides calories and energy so that protein can be used elsewhere.
	Increase protein. Give examples of foods high in protein: 1. ____________ 2. ____________ 3. ____________	Helps to rebuild damaged liver tissues.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
	Low-fat foods.	Tissue damage is caused by fat deposits in the liver.
	Give examples of foods high in fat: 1. ______________ 2. ______________ 3. ______________	
	Vitamin and iron supplements.	Given to improve general physical condition and to increase the hemoglobin.
	Low sodium.	Decrease fluid retention.
	No alcoholic beverages.	Alcohol is believed to contribute to anemia.
Anorexia	Soft to semi-liquid diet.	Easier to eat.
	Frequent small meals.	Patient will probably eat more because patient will be less depressed about not eating.
	Have patient suggest foods and when something is requested, get it immediately.	Keep the patient involved with own care.

Two grave complications of cirrhosis of the liver that the nurse should be aware of and should observe for in patients are:

1. A collection of fluid in the abdominal cavity - ascites - causes an obstruction of the portal vein. This obstruction decreases the protein in the blood causing the fluid to leave the bloodstream.

   This complication is treated with a low-sodium diet, diuretics and paracentesis (removal of the fluid in the abdominal cavity with a needle).

LEARNING ACTIVITIES - continued

2. Esophageal varicosities (swollen veins) may also develop from an obstruction of the portal vein. With this complication, there is a greater than average chance of hemorrhage of a varicosity. Medical care includes stopping the bleeding by applying pressure at the bleeding point with an inflatable balloon and by blood transfusion.

ACTIVITY #25. Pancreatitis

Directions: Read the following information.

An inflammation of the pancreas (pancreatitis) is usually caused by the formation of stones in the pancreatic duct, tumors or strictures that prevent the pancreatic juices from being excreted. Anatomically, this could cause edema of pancreatic tissue, necrosis or hemorrhage.

Signs, Symptoms and Nursing Care

Study the chart below stating the signs and the symptoms of pancreatitis and the medical or nursing approach that should be taken. Add the rationale for the nursing approach.

Patient Problem	Nursing Approach	Rationale
Constant pain in epigastric region.	Large doses of an analgesic (Demerol or morphine) every four to six hours.	
Nausea and vomiting.	NPO, IV fluids. Good mouth care. A nasogastric tube may be necessary.	

Other symptoms that may occur are elevated temperature, increased white blood count and jaundice. Chronic pancreatitis may indicate a need for a pancreatectomy. Any pancreatic tumor will also necessitate surgery.

Pancreatectomy

No specific surgery cures pancreatitis. An exploratory laparotomy may be performed when a diagnosis cannot be made and to treat peritonitis or an organ perforation. A partial or total pancreatectomy may be performed (depending upon severity of the disease). In a total pancreatectomy, the secretion of insulin will be eliminated, therefore, the patient will take insulin for the rest of his/her life. Preoperative preparation is the same as for other abdominal surgery. Routine postoperative care will also include observing for peritonitis jaundice and intestinal obstruction. Fecal observation for light-colored stool with frothy appearance and undigested particles of fat should be made.

LEARNING ACTIVITIES - continued

ACTIVITY #26. Cholecystitis, Cholelithiasis and Cholecystectomy

Directions: Read the following.

Cholecystitis is an inflammation of the gallbladder caused by organisms such as staphylococci or colon bacilli, chemicals or gallstones in the biliary system that cause damming up of the bile in the gallbladder.

Signs and Symptoms

Signs and symptoms of this disease are severe pain in the right upper quadrant of the abdomen, nausea and vomiting, increased pulse rate and respirations and an elevated temperature. Fatty foods such as greasy chicken or chimichangas may bring about a "gallbladder attack." A cholecystectomy, which is the treatment of choice, will be discussed later.

Cholelithiasis is a condition in which stones are formed in the biliary tract. These stones are composed of cholesterol, bile pigment and calcium, but no one knows why they are formed. There is no set size, shape or number of the stones needed to cause pain and suffering to a patient. Some patients may have gallstones for years before they settle into a duct and cause an obstruction. Once an obstruction occurs, however, the patient experiences severe pain called biliary colic. The pain has a sudden onset. It starts in the right quadrant of the abdomen, radiates to the back and up the right shoulder.

This pain can be so severe that even medication will not relieve it. (Demerol and morphine are believed to increase biliary spasms.) Nausea, vomiting, diaphoresis and tachycardia accompany the pain, making the patient completely miserable and exhausted.

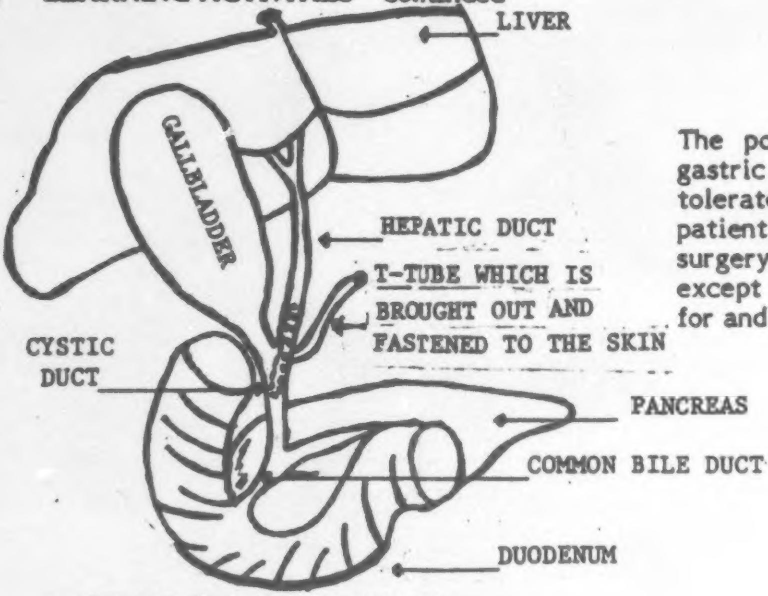
Treatment and Nursing Care for Cholecystitis and Cholecystectomy

The recommended treatment is a cholecystectomy with exploration of the bile ducts. A cholecystectomy is the removal of the gallbladder. When this procedure has been performed, a penrose drain (a flat rubber tube) is usually placed near the cystic duct that has been cut and brought out through the wound. It is important to check the dressing frequently for color and for amount of drainage. Remember, the patient will have to roll on the left side so that you can observe the dressing and check if any drainage has rolled down his/her side. You may need to reinforce the dressing many times, but only reinforce, unless the doctor orders otherwise. The first surgical dressing must be changed by the physician!!

Always check the surgery notes to see if any drains were inserted in the wound. If drains are present, drainage will be expected. The drain will remain in place five or six days. The physician may advance the drain (pull it out of the wound a few inches every other day) but usually after six days, it will be removed.

If the surgeon also explored the common bile duct for stones, a T-tube will be placed into the duct. This is done because the manipulation of the duct could cause edema and a backup of bile into the liver. The T-tube, as pictured on the next page, is attached to a drainage bag and is usually secured to the dressing by a pin or a tape. At first, the tube will drain much bile but after ten to fourteen days, the bile should again drain into the duodenum.

LEARNING ACTIVITIES - continued


LIVER
GALLBLADDER
HEPATIC DUCT
T-TUBE WHICH IS BROUGHT OUT AND FASTENED TO THE SKIN
CYSTIC DUCT
PANCREAS
COMMON BILE DUCT
DUODENUM

Post Operative Care

The postop patient may have a nasogastric tube for 24 hours but can usually tolerate fluids immediately postop. The patient is also ambulatory the day after surgery. The postop care is quite routine except the drainage tube must be cared for and observed regularly.

ACTIVITY #27. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. List four functions of the liver.

   a. ________________________________

   b. ________________________________

   c. ________________________________

   d. ________________________________

2. List two functions of the gallbladder.

   a. ________________________________

   b. ________________________________

3. The pancreas produces enzymes that help digest ________________ and ________________.

4. A patient receives IV medication with a cholecystogram. TRUE FALSE

5. A patient is NPO for a GB series. TRUE FALSE

6. The patient will remain flat for several hours after a liver biopsy. TRUE FALSE

7. The patient may eat anything after the liver biopsy. TRUE FALSE

LEARNING ACTIVITIES - continued

8. You can develop viral hepatitis by:

   a. ______________________________

   b. ______________________________

9. When bile does not flow freely into the duodenum, what signs of "bile in the blood" appear?

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

10. Check which condition(s) from the list below will be observed in the patient with a "bile backup."

    a. _____ colored urine

    b. _____ colored stools

    c. _____ colored sclera

11. A patient with hepatitis should be bathed frequently if he/she is complaining of ______________________________.

12. The most common cause of cirrhosis of the liver is ____________________.

13. One of the nurse's main concerns is to make sure that the patient with cirrhosis has ______________________________.

14. What is cholelithiasis? ______________________________

15. What is a complication of cholelithiasis? ____________________

16. What is the recommended treatment for an inflammation of the gallbladder or gallstones? ______________________________

    ____

17. The purpose of a T-tube is to ______________________________

    ______________________________.

18. Much drainage will appear on the surgical dressing after the gallbladder has been removed if ______________________________.

19. What does "advance the drain" mean? ______________________________

LEARNING ACTIVITIES - continued

ACTIVITY #28. Nursing Assessment Relating to the Gastrointestinal System

__Directions:__ Read the following.

Nursing Assessment

Nursing assessment of a patient with a gastrointestinal problem aids in establishing a diagnosis, contributes to the medical plan of care and provides a basis for planning patient care and nursing intervention. Such information is pertinent in determining the needs of the patient and evaluating progress.

The following considerations and related questions provide the basis for patient assessment.

1. The patient's chief complaint
   a. Is this different from anything experienced before?
   b. Is it related to a past history of such difficulty?
   c. Has there been previous surgery?
2. Appearance of the patient
   a. Is there pallor, cyanosis, jaundice?
   b. Is the patient clutching his/her abdomen?
   c. Is there any effect on ambulation?
3. Nausea and vomiting
   a. What precipitates nausea?
   b. Is it accompanied by vomiting? If so, how much?
   c. What is the odor and consistency of the vomitus?
   d. How many times today has the patient vomited?
   e. What food or liquid can be tolerated?
   f. Does the vomitus include any food from previous meal?
4. Abdominal pain
   a. Is it localized? Where?
   b. Radiating?

LEARNING ACTIVITIES - continued

c. Quality of pain.

   (1) Is it constant?

   (2) Crampy (colicky)?

   (3) Duration and intensity

   (4) Nature of onset

   (5) What aggravates it?

   (6) What alleviates it?

5. Swallowing and food intake

   a. When and what has the patient eaten last?

   b. Is there any pain or difficulty swallowing?

   c. What kind of food or fluid causes difficulty?

   d. When does discomfort occur in relation to eating?

   e. Is there:

      (1) Belching

      (2) Dysphagia

      (3) Flatulence

      (4) Distention

      (5) Feeling of fullness

      (6) Any abnormal taste

6. Nutrition

   a. Have the patient's food habits changed recently?

   b. What foods disagree with the patient?

   c. Is the patient on a special diet?

   d. Has the patient lost weight?

   e. What kind of snacks does the patient eat?

LEARNING ACTIVITIES - continued

7. Elimination
   - a. Has the patient had a change in bowel habits?
   - b. Describe the stool:
     - (1) Constipation
     - (2) Diarrhea
     - (3) What is the color of the stool?
     - (4) Odor
     - (5) Consistency
   - c. How often does the patient have a bowel movement?
   - d. Does the patient take laxatives?
     - (1) Why?
     - (2) What kind?
   - e. Does the patient take enemas?
     - (1) Why?
     - (2) What kind?
     - (3) Frequency
   - f. Has the patient noticed blood in stools?
   - g. Is there pain with bowel movements?
     - (1) Describe pain
8. Quality of vital signs
   - a. Is there any evidence of fever?
   - b. Is there any evidence of hemorrhage?
9. Examination of abdomen
   - a. Have patient identify area of pain.
   - b. Is abdomen rigid?
   - c. Is abdomen tight?

LEARNING ACTIVITIES - continued

   d. Tender to gentle pressure?

   e. Does the patient guard the area with voluntary muscle contraction?

   f. Is there rebound tenderness (when gentle pressure is suddenly released, pain is more intense)?

      Note: Such examination should be limited to as few examiners as possible, since it may be very uncomfortable for the patient.

   g. Is abdomen distended?

9. Associated symptoms

   a. Has the patient been around anyone who had the same complaints recently?

   b. Is the patient urinating more than usual?

   c. Does the patient have any allergy to medications?

10. Patient's own reaction

   a. What is the patient's reaction to the problem?

ACTIVITY #29. Clinical Assignment

Directions: Read the following objectives that are specific to the care of patients with diseases of the gastrointestinal system. You are responsible for their care, as well as the general clinical objectives, when assigned to such patients.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:

   a. Pain

   b. Fear

   c. Anxiety

   d. Gastrointestinal distress

2. Demonstrate the nursing procedures for diagnostic tests done for your assigned patients and determine if the test results were within normal range:

   a. Esophagoscopy

   b. Gastroscopy

LEARNING ACTIVITIES - concluded

  c. Gastrointestinal series (G.I.)
  d. Gastric analysis
  e. Tubeless gastric analysis
  f. Nasogastric tubes
  g. Gastric gavage
  h. Gastric lavage
  i. Barium enema (Ba E)
  j. Sigmoidoscopy - Proctoscopy
  k. Stool examination
  l. Liver function tests
  m. Liver biopsy
  n. Cholecystography

3. Demonstrate nursing care of patients with therapy specifically related to gastrointestinal system:
   a. Gastric gavage
   b. Gastrostomy
   c. Ileostomy care
   d. Colostomy care
4. Demonstrate teaching the patient and family the following:
   a. Diet therapy including fluid balance
   b. Hyperalimentation
   c. Gastrostomy, ileostomy and colostomy care

unit 17

NURSING CARE OF ADULTS

Module E - Nursing Care for Patients with Diseases of the Urinary System

RATIONALE

To give safe, effective nursing care to a patient with a disease of the urinary system, you must know the physiological changes that occur and the signs and the symptoms to observe.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the normal anatomy and physiology of the urinary system and the physiological changes that occur with diseases affecting the urinary system.
2. Identify the vocabulary words found in Activity #1 and #2.
3. Identify common laboratory tests, their preparations and procedures used to identify diseases of the urinary system.
4. Identify common signs, symptoms and treatments of diseases related to the urinary system.
5. Verbally describe or name the nursing action, patient symptoms, treatments and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the urinary system.
6. Demonstrate appropriate nursing care following the objectives in Activity #15 when given a clinical assignment of caring for a patient with a disorder of the urinary system.
7. Demonstrate nursing assessment of a patient with a disorder of the urinary system.

LEARNING ACTIVITIES

Directions: The information you need to complete Module E is included in this module and in the reading assignment from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the urinary system and review Unit 4, Module G and Unit 8, Module G 1-8. The exercises are included to help you to learn the material. There are many diseases and conditions common to the urinary system; however, the diseases and conditions discussed in this module are the most common.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to the Urinary System

Directions: Read and study Chapter 17, "Nursing the Patient with Problems of the Urinary System." Now, review Module G in Unit 4. After reviewing Module G, answer the questions below by filling in the blanks or by circling "true" or "false."

1. The kidneys are imbedded in fat, which suspends them in the ____________________ cavity.

2. Each kidney is made up of millions of ____________________________, which are microscopic and actually do the work of the kidneys.

3. The kidneys filter wastes from the plasma portion of the blood and (excrete, secrete) these wastes as urine.

4. How many cc's of urine do the kidneys produce each day? ________________

5. How many cc's of urine do the kidneys produce each hour? ________________

6. Remember, urine production is a three-step process. The first step is ________

   ____

   ____

7. The second step in urine production is __________________________________ .

   ____ .

8. The third step in urine production is __________________________, in which the portion of the plasma that is not reabsorbed is collected in the renal pelvis as urine.

9. Normal urine is about ______% water.

10. What is the specific gravity of urine? ____________________________________

11. Some of the common waste products secreted in urine include urea, creatinine, ________ acid and various salts.

12. The bladder is located in the ______________ cavity.

13. The bladder functions to store urine and to (excrete, secrete) urine.

14. The bladder normally (excretes, secretes) about _____ cc of urine each time the person voids.

15. When the average healthy person voids, he/she normally empties all of the urine from the bladder. TRUE FALSE

LEARNING ACTIVITIES - continued

16. Urine that is left in the bladder after urination is called ______________ urine.

17. When a patient's bladder is full and he/she is unable to urinate, the patient has ________________ of urine.

18. Define the following terms. You may use Taber's Cyclopedic Medical Dictionary or any other source of your choice.

a. Anuria: ____

b. Dialysate: ____

c. Diuresis: ____

d. Dysuria: ____

e. Edema: ____

f. Extracellular: ____

g. Fistula: ____

h. Hematuria: ____

i. Hemodialysis: ____

j. Incontinent: ____

k. Interstitial: ____

l. Intracellular: ____

m. Micturition: ____

n. Oliguria: ____

o. Osmosis: ____

p. Peritoneum: ____

q. Polyuria: ____

r. Residual urine: ____

s. Retention: ____

t. Shunt: ____

u. Suprapubic: ____

v. Suppression: ____

LEARNING ACTIVITIES - continued

ACTIVITY #2. Urinary Terminology Review

Directions: Match the following prefixes and suffixes in Column I with their definition in Column II by placing the number in front of the correct prefix or suffix.

1.

	COLUMN I		COLUMN II
_____	-ectomy	1.	refers to stone
_____	cysto-	2.	incision into
_____	pyelo-	3.	refers to ureter
_____	-ostomy	4.	removal of
_____	lith-	5.	condition of
_____	nephro-	6.	refers to renal pelvis
_____	-itis	7.	hardening of
_____	uretero	8.	refers to kidney or nephron
_____	-otomy	9.	creating an opening
_____	-sclerosis	10.	inflammation of
_____	-osis	11.	refers to bladder

2. **Directions:** Now combine the above prefixes and suffixes to form medical terms that relate to the urinary system and define each statement found below with the correct term.

a. Removal of the bladder: ______________________________

b. Creating an opening into the kidney: ______________________________

c. Incision into the kidney for stones: ______________________________

d. Inflammation of the bladder: ______________________________

e. Removal of the kidney: ______________________________

f. Creating an opening into the ureter: ______________________________

g. Hardening of the kidney: ______________________________

h. Inflammation of the renal pelvis: ______________________________

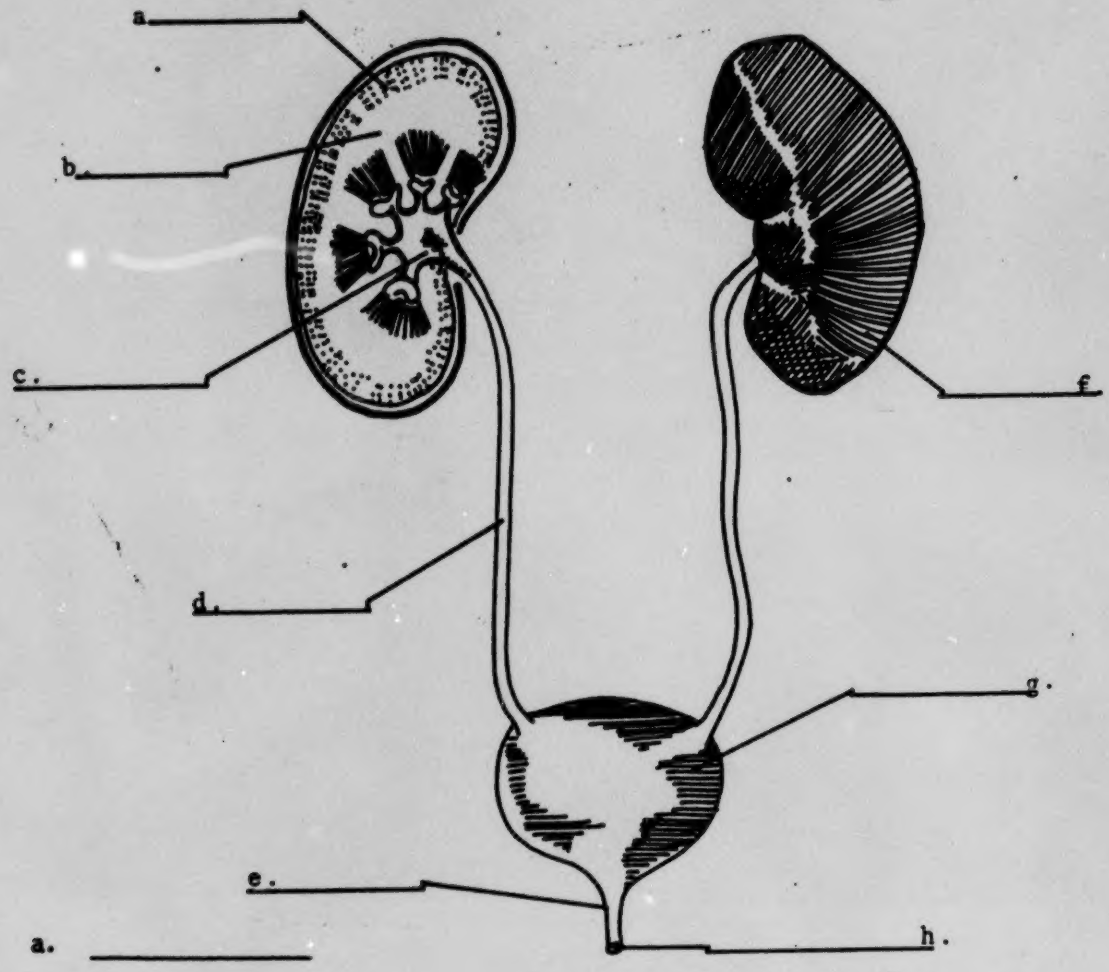
LEARNING ACTIVITIES - continued

i. Kidney condition: ____________________

j. Creating an opening in the bladder: ____________________

ACTIVITY #3. Anatomy Review

Directions: Review the anatomy and physiology of the urinary system using Unit 4, Module G. Then label the structures and their function.



a. ____________

____

b. ____________

____

c. ____________

____

LEARNING ACTIVITIES - continued

d. ____________

____

e. ____________

____

f. ____________

____

g. ____________

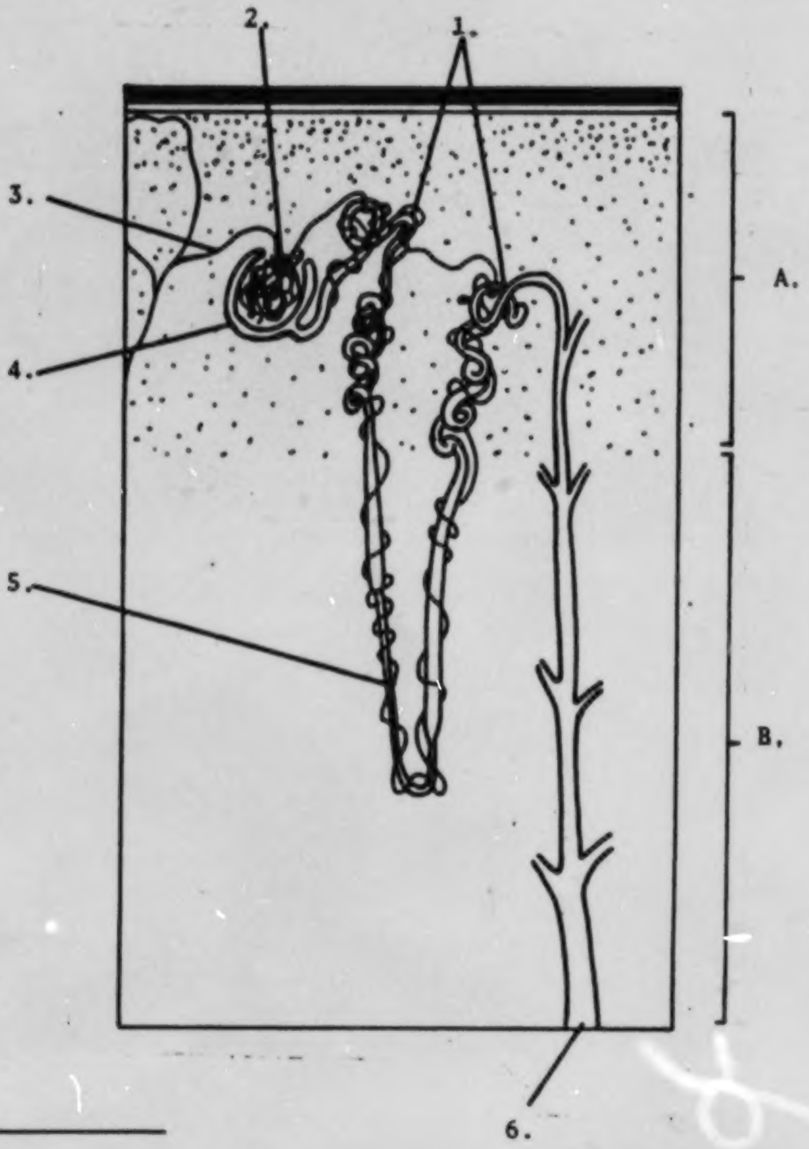
____

h. ____________

____

LEARNING ACTIVITIES - continued

Label the parts of the nephron from the diagram below.



A. ______________

B. ______________

1. ______________

____

2. ______________

____

LEARNING ACTIVITIES - continued

3. ______________
____

4. ______________
____

5. ______________
____

ACTIVITY #4. Diagnostic Tests For Urinary Functioning

Directions: Read the following.

Urinalysis

Routine Urinalysis

A routine urinalysis is ordered automatically when the patient is admitted to the hospital. It is the test used in screening for urinary tract disease. The characteristics of urine examined in routine analysis include:

1. Color - The color of normal urine varies from pale yellow to amber depending on the amount of urine voided and the concentration of the dissolved wastes in the urine. Cloudy red, pink-tinged or bright red urine indicates hematuria, possibly from a urinary tract malignancy, severe infection or kidney stones.

2. Appearance - Urine is normally clear. Pus, bacteria, blood cells or epithelial cells in urine may give it a cloudy appearance.

3. PH or acidity - Urine is normally acid with a low pH (4.6 to 8) because of bacterial action on the urea excreted in urine. Alkaline urine predisposes the patient to infection. Bladder infections may also cause the urine to increase in alkalinity.

4. Specific gravity - Specific gravity measures the ability of the kidneys to concentrate or dilute urine. The normal specific gravity varies throughout the day from 1.010 to 1.030.

5. Abnormal substances - Normal urine should not contain any of the following:

   a. Protein - called proteinuria or albuminuria. Protein in urine is characteristic of acute and chronic renal disease, especially involving the glomerulus. It may also be present in heart disease and pyrexia.

   b. Glucose - Glucosuria is seen most frequently in patients with diabetes mellitus. Transient glucosuria results from excess intake of surgar that the body cannot readily assimilate.

   c. Ketone bodies or acetone - Ketonuria is seen in diabetic patients and patients who are dehydrated or starving, e.g. diabetic acidosis.

LEARNING ACTIVITIES - continued

d. Blood cells - Red blood cells and white blood cells in urine are indicative of kidney damage.

e. Bacteria - Remember, urine is normally sterile; the presence of gross bacteria in a routine urine sample may indicate urinary tract infection.

It is best to get the first voided urine in the morning and send it to the lab for analysis. You should chart that the urine has been sent and note the color, amount and consistency of urine.

Urine for Culture and Sensitivity (C & S)

The urine is cultured to determine whether the patient has a urinary tract infection and if so, to determine what bacteria are causing that infection. The sensitivity test is done to determine which antibiotics will kill the bacteria. A urine sample to be tested for culture and sensitivity may be either a clean catch specimen, also called a midstream specimen, or a sterile specimen. Remember, a sterile specimen can only be obtained through a catheter. If the patient does not have a catheter draining urine, the patient must be catheterized to collect a sterile specimen. All specimens for C & S must be collected in a sterile container, labeled and sent to the lab immediately.

Creatinine Clearance Test

The kidneys normally filter the blood of nitrogen wastes and excrete these wastes as urea, creatinine and uric acid in the urine. When there is damage to the glomerulus or when the kidneys do not function well, these nitrogen wastes will accumulate in the blood instead of being excreted in the urine. The creatinine clearance test is a kidney function test. Urine is collected over a 24-hour period and is then examined to see how much creatinine was excreted. Once during the 24-hour period, blood is drawn to see how much creatinine is remaining in the blood. Review 24-hour urine collection in Unit 8, Module G-7.

Normal values	M	110 - 150 ml/min
	F	105 - 132 ml/min

Urea Clearance Test

Urea is another nitrogen waste that is filtered out of the blood and excreted in the urine. The urea clearance test determines kidney function. At the beginning of the test, the patient is instructed to void. That urine is discarded but the time of voiding is recorded. Urine samples are then collected at the end of the first hour and at the end of the second hour, and examined for urea. Blood samples are also drawn during the first and the second hours and the amount of urea in the blood is compared with the amount of urea exceted. If the amount of urea excreted in urine is less than normal, then kidney damage, especially in the glomerulus, is possible.

Residual Urine

When you urinate, you normally excrete all but about 5 cc of urine. If after urinating, more than 50 cc of urine is left in the bladder, that urine retained by the bladder is called residual urine. The patient is asked to void and immediately after voiding is catheterized to determine the amount of urine left in the bladder. Please review urethral catheterization of a patient in Unit 8, Module G-8.

Blood Work

Blood Urea Nitrogen (BUN)

Remember that urea nitrogen is a waste product that is ordinarily filtered out of the bloodstream. An elevated BUN may indicate urinary obstruction or kidney damage. Urea results from protein metabolism and accounts for half of the solid material in urine. A continued rise may cause the patient to be disoriented, have mental confusion and go into convulsions. Normal value is 8-18 mg/100 ml.

Serum Creatinine

This is a fasting test done on blood serum. An elevated serum creatinine means that the kidneys are not functioning to filter the creatinine waste and indicates damage, especially to the glomerulus. It gives an accurate measure of renal function. Normal value is 0.6 - 1.2 mg/100 ml.

X-Ray

Intravenous Pyelogram (IVP)

An IVP is an x-ray done to help visualize the kidneys, ureters and bladder. A radiopaque dye (a dye that is visible by x-ray examination) is injected into the patient's vein, usually in the arm. The dye is filtered out of the blood by the kidneys. It outlines the renal pelvis, the ureters and the bladder on x-ray films as it passes along the urinary tract. Because the kidneys must filter the dye, an IVP also provides some information about kidney function. The x-ray is most valuable in helping to diagnose obstruction or lesions in the kidneys and the ureters. Question the patient carefully about allergy, since some people may be sensitive to the dye. Common side effects experienced by patients are hot flashes and nausea. The effects subside after the dye is voided by the patient. In severe allergy reactions, death can result from anaphylaxic shock.

Preparation for the x-ray varies in every hospital. Check your hospital for the procedure used. Usually preparation includes the following.

1. NPO for liquids after midnight if the test is to be done the next morning. (In some hospitals, the patient is allowed a dry breakfast.) If the patient is dehydrated, the dye will be concentrated, allowing for a much better visualization on x-ray.

2. Laxative the evening before the x-ray or an enema in the morning of x-ray or both. Fecal material or flatus in the colon will not allow for a good visualization of the kidneys.

LEARNING ACTIVITIES - continued

Retrograde Pyelogram

A retrograde pyelogram is a procedure that is usually done at the same time as a cystoscopy, when a patient has been anesthetized (general or spinal). After the physician inserts the cystoscope into the bladder, very small catheters are threaded through the scope, up through the ureters and into the renal pelvis. A radiopaque dye is then injected into the pelvis of each kidney through the catheters. The procedure provides a clear and a detailed x-ray of the shape of the kidneys, ureters and bladder. This is done when obstruction is suspected.

Voiding Cystogram

A voiding cystogram is another x-ray that helps to diagnose disease or defects of the bladder and the urethra. The patient is catheterized to remove urine and dye is injected into the bladder through the catheter. The catheter is then removed and an x-ray is taken of the bladder and the urethra as the patient voids the dye.

Kidney, Ureter, Bladder (KUB)

A KUB is an x-ray of the kidneys, the ureter and the bladder without the use of dye. This serves as a screening prior to other procedures.

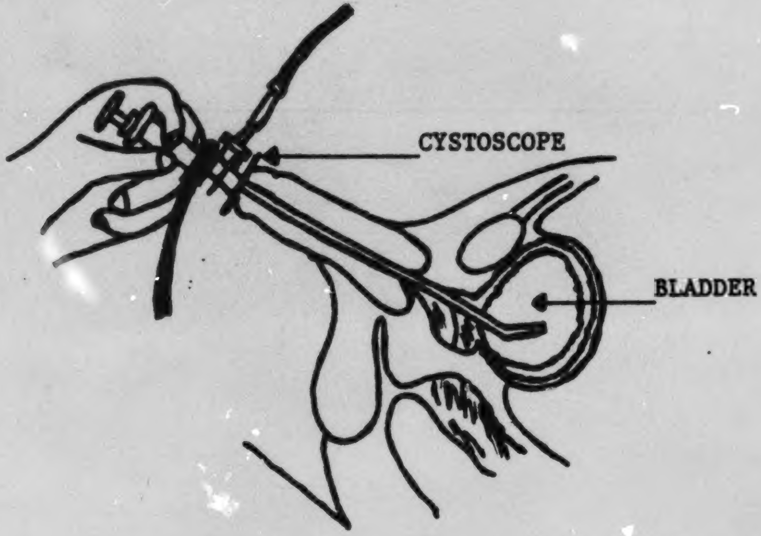
Visual Examination

Cystoscopy

A cystocopy is a procedure in which the bladder can be directly visualized through a cystoscope. The cystoscope is equipped with a high intensity light and a small telescope to magnify the walls of the bladder and the urethra. By manipulating the cystoscope, the urologist can examine the entire bladder. Cystoscopy also permits the physician to obtain a biopsy of the bladder and to remove any calculi obstructing the urethra, the bladder or the ureters.

The cystoscopy is sometimes done in the operating room and the patient is cared for as if he had undergone a surgical procedure. After the examination, the patient may complain of urinary frequency, burning on urination, and urine may be blood-tinged. Occasionally, the patient may have urinary retention from edema of the urethra and the bladder walls so urinary output should be measured carefully. If ordered by the physician, moist heat to the lower abdomen or hot sitz baths may help to relieve pain and retention. Many urologists are now performing cystoscopic examinations in their offices under local anesthesia. As an LPN you must be observant of the patient's voiding and of possible hemorrhage after this procedure.

LEARNING ACTIVITIES - continued



A Cystoscopy

Directions: Answer the following questions on the information you have just read.

1. What urine examination is automatically ordered when the patient is admitted to the hospital? ______________________________

2. This examination includes checking at least five characteristics of urine. These are: color, appearance, ______________ or acidity, ______________ ______________, and abnormal substances.

3. Since the bladder contains its own natural bacteria, you would expect to find some bacteria in urine during a routine examination. TRUE FALSE

4. The normal specific gravity of urine is from ______________ to ______________.

5. The pH of urine is normally (acid, alkaline).

6. Proteinuria or ______________ is characteristic of renal disease, especially involving the ______________.

7. "Urine for C & S" stands for what? ______________________________

8. There are two ways in which to obtain a sample of urine to be tested for C & S. What are they?

   a. ______________________________

   b. ______________________________

LEARNING ACTIVITIES - continued

9. What is the physician looking for when he/she orders urine to be cultured?

____

10. Two nitrogen wastes that are filtered out of the blood by the kidneys are ______________________ and ______________________.

11. A creatinine clearance test is a 24-hour urine study that tests kidney function.
TRUE FALSE

12. If after voiding there is more than _____cc of urine retained by the bladder, that urine is called _____________ urine.

13. To test this urine (answer to #12), the patient must be catheterized.
TRUE FALSE

14. BUN stands for _______________ _______________ _______________.

What does an elevated BUN indicate?

____

15. IVP means: ____

16. An IVP involves an intravenous injection of a ______________________ dye that outlines the renal pelvis, the ureters and the bladder on x-ray.

17. A patient being prepared for an IVP is normally NPO for food but is allowed to drink fluids. TRUE FALSE

18. When the patient is catheterized to inject dye into the bladder and is then asked to void the dye, the x-ray is known as a ________________________.

19. A KUB is an x-ray of the ________________, ________________, and _____________.

20. _________________________ is a visual examination that also permits the physician to obain a biopsy of the kidneys or remove stones from the ureters.

ACTIVITY #5. Obstructive Diseases of the Urinary System

Directions: Read the following information.

Renal Calculi

When crystals of uric acid, calcium and phosphate are excreted in the urine, they may deposit themselves along the urinary tract and form stones. Stones may form anywhere from the kidney to the bladder. Their size will vary from sand or gravel-like deposits to bladder stones the size of an orange. Diagnosis of renal calculi is usually confirmed by an IVP or retrograde pyelogram as well as a cystoscopy.

LEARNING ACTIVITIES - continued

Symptoms

1. Dull ache or pain exists in the lower back, either the right or the left side, depending upon which kidney is involved.

2. Pyuria - Urine contains blood and pus from the constant irritation of the stone and the infection that develops at the site of the irritation.

3. Patient may experience renal colic or very sudden, acute pain radiating from the lower back down toward the bladder (or to the testicles in the male), nausea and vomiting. When the stone is lodged in the ureter, the symptoms include:

   a. Ureteral colic, which is experienced as the ureter goes into a spasm to try to pass the stone; acute, shocking pain from the right or the left side radiating down the thigh or into the testicles.

   b. Urinary frequency exists but very little urine is actually passed. Such urine contains blood and pus.

Most renal calculi are passed into the lower portion of the ureter or into the bladder where they are excreted or may be removed during a cystoscopic examination. However, if the stones are lodged in the kidney or the ureter and block the flow of urine, hydronephrosis may develop. A nephrolithotomy may be necessary to remove these stones.

Hydronephrosis is a distention of the pelvis of the kidney from obstruction of the flow of urine. When the normal flow of urine is obstructed, the urine "dams up" in the renal pelvis putting pressure on the kidney. If the obstruction is in the ureter, the pressure affects only one kidney; if the obstruction is in the bladder or urethra, both kidneys are damaged. This pressure will eventually cause destruction of kidney tissues and the kidney may atrophy or waste away.

If hydronephrosis affects only one kidney, most patients are unaware of the trouble. The urinary output may not be decreased as the good kidney takes over for the involved kidney. The patient may experience some low back pain only when the pressure within the dilated renal pelvis is very high. However, if the hydronephrosis affects both kidneys, the patient may develop kidney failure.

Nursing Care

1. Relieve pain with analgesic drugs, hot baths or heat to the area as prescribed by the physician.

2. Force fluids to aid in the passage of stones and to prevent new stones from forming, up to 3000 cc in 24 hours. Encourage fluids that will acidify urine.

3. Strain all urine and observe for sediment, crystals and stones and report findings.

4. Measure and record intake and output.

5. Patient should be ambulatory to help pass the stone.

6. The doctor may order antibiotics prophylactically.

LEARNING ACTIVITIES - continued

Postop Nursing Care Following Removal of a Stone (Ureterolithotomy, Pyelolithotomy, Nephrolithotomy)

1. Normal recovery room and postoperative observations.
2. Apply Montgomery straps near wound site to secure dressing in anticipation of larger amounts of wound drainage.
3. Keep wound area dry by frequent sterile dressing changes, being careful not to dislodge penrose drain in the wound.
4. Keep Foley catheter draining freely.
5. Maintain accurate intake and output and records.
6. Observe urine color and record.
7. Keep patient as pain-free as possible with analgesics as ordered.
8. Keep wound site splinted when coughing and movement occurs.
9. In absence of a Foley, assist males to stand when urinating.

Urethral Strictures

A urethral stricture is a narrowing or constriction of the space within the urethra. Strictures are usually the result of some tissue that develops because of trauma or recurrent infection, especially gonorrheal infection. Because the stricture obstructs the normal flow of urine from the bladder, retention of urine may cause bladder distention and infection. A voiding cystogram helps the physician to make the diagnosis.

Symptoms

1. Slow stream of urine. The stream may be forked.
2. Retention and residual urine. Feel the bladder to see if it is distended.
3. Urinary frequency and nocturia or having to void frequently during the night. Burning on urination (dysuria) develops when infection is a complication.

Treatments by the physician

Dilation - Urethral dilation is a procedure that provides a gradual widening of the stricture. The physician gently inserts metal tubes of different sizes into the urethra, starting with a very small tube and gradually increasing the size. The stricture is usually well dilated after one or two treatments but periodic dilations may be required for the rest of the patient's life. The patient may have some burning on urination and hematuria after the procedure. Urinary output should be carefully measured and recorded. Hot sitz baths may help to relieve the pain.

LEARNING ACTIVITIES - continued

Urethroplasty - A urethroplasty is a surgical repair of the urethra. The physician removes the strictured area and grafts the urethra to repair it. The patient will have a catheter in place until the urethra has healed. Most of the urine, however, will be diverted from the urethra and excreted through a suprapubic cystostomy tube (a catheter that is placed directly into the bladder through a surgical incision in the bladder above the pubic area).

Tumors

Although renal and bladder tumors are uncommon, most are cancerous. These tumors occur more frequently in men than in women and are associated with smoking. Renal tumors are especially dangerous because the patient may not have any symptoms and the cancer may metastasize early to the lungs, brain, liver or bones. The physician will usually order an IVP or retrograde pyelogram to diagnose the renal tumor. Diagnosis of a bladder tumor is made by a cystoscopic examination and a biopsy.

Symptoms of renal tumors include:

1. Painless hematuria is the most common early symptom. It is a symptom that is often ignored because it is painless and may come and go over a period of time.
2. Dull, aching low-back pain.
3. Weight loss and unexplained fever (FUO). These are late symptoms and usually occur after the tumor has metastasized.

When cancer is diagnosed, the kidney will be removed by a surgical procedure known as a nephrectomy. The ureter and part of the bladder may also be removed.

Postoperative Nursing Care

1. Encourage the patient to turn, cough and deep breathe hourly to prevent chest complications. The patient needs frequent encouragement. Since the incision is close to the diaphragm these activities are very painful and the patient is less likely to want to do them. IPPB treatments and incentive spirometer may be ordered.
2. Encourage leg exercise in bed to prevent thrombi from forming in the leg veins. These include ROM and ankle rotation.
3. Medicate for pain - PRN as ordered.
4. Accurate I & O. Note the color and the appearance of the urine.
5. If the patient has clamps in the incision, care must be taken not to dislodge them. The patient should not lie on the operative side.
6. Encourage fluids after peristaltic activity is present.
7. Observe carefully for symptoms of hemorrhage and for shock such as restlessness, cool and clammy skin, rapid pulse and low blood pressure. Drainage will collect on the dressings on the patient's back, not on his front.

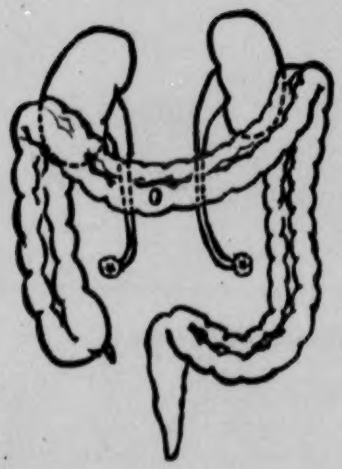
LEARNING ACTIVITIES - continued

Symptoms of bladder tumors are:

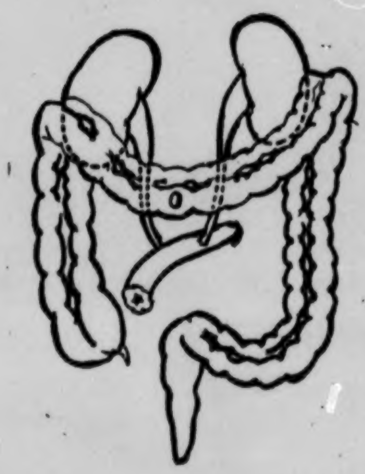
1. Painless hematuria is most common and is an early symptom.
2. Urinary frequency, urgency and dysuria (painful voiding) develop when infection is a complication.

The cancerous bladder is surgically removed by a procedure known as a cystectomy. When a cystectomy is performed, urine must be excreted from the body through a new passageway. Two operations for creating this new passageway include:

1. Cutaneous ureterostomy - Both ureters are brought to the skin surface and allowed to drain into a collecting bag that is worn over the opening.
2. Ileal conduit - The ureters are transplanted into a portion of the ileum, a part of the small intestine, which is then brought to the skin surface as an ileostomy opening. The loop of ileum is removed from the intestines and forms a pouch to collect urine. An ileostomy bag is permanently worn to collect the urinary drainage from the skin opening. The intestine is sewn together again (anastomosis) so that stools are excreted normally.



1. Cutaneous ureterostomy in which the ureters are brought through the skin onto the abdomen.



2. Ileal conduit.

Directions: Study the care plan for a patient with the surgical procedure of cystectomy with ileal conduit.

Cystectomy With Ileal Conduit

Patient Problems	Expected Outcome	Nursing Approach
Postoperative 1. Special emphasis on prevention of pulmonary emboli.		Early ambulation. Turn, cough, deep breath, leg exercises q 2 h. Antiembolic shocking (with physician's order).
2. Decreased intestinal motality.	Normal gastrointestinal function.	Gastric suction is usual for several days. Irrigation Ambulate Rectal R x only if ordered.
3. Decreased urinary output.	Normal output. Skin clean, clear. Patient knows how to care for conduit.	1. Accurate I & O - Report immediately decreased output, (less 30cc/hr) low abdominal pain/flank pain. 2. While ureteral catheters are present, great care must be exercised not to dislodge them. 3. Bedside drainage while patient is in bed prevents backflow of urine and helps keep the seal intact.
4. Skin excoriation (Ileal conduit bags must be changed if the seal leaks. Urine excoriates the skin so quickly that merely patching will lead to skin breakdown, even over 6-8 hours)	Clean, well-cared for skin.	1. Have all supplies within reach and ready to use; stomahesive, pouch, skin prep, sterile cotton balls. 2. Cut stomahesive to fit snugly around stoma. 3. Cut opening of pouch 1/8" larger than base of stoma. 4. Spray skin prep around stomahesive. 5. Remove old pouch (check to see if it is reusable). 6. Cleanse and dry skin thoroughly. 7. Apply stomahesive or other skin barrier. 8. Apply face plate (if used) and then pouch.

Patient Problems	Expected Outcome	Nursing Approach
5. Altered body image	Eventual acceptance of altered body image.	1. Approach nursing care of stomas matter of factly. 2. Encourage patient and patient's family to participate in stoma care. 3. Encourage patient to ventilate feelings and fears and listen actively. 4. Tell patient about local "stoma clubs" and encourage participation.

LEARNING ACTIVITIES - continued

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. Another name for stones that may form in the kidney or bladder is ________________________.

2. To diagnose stones in the kidney, the physician will probably order two x-ray examinations. What are they?

   a. ____

   b. ____

3. Polyuria is a symptom of kidney stones. TRUE FALSE

4. Polyuria is a word meaning ____ .

5. When the patient with kidney stones experiences nausea, vomiting and very sudden pain radiating from the lower back down to the bladder, the pain is known as ________________________ ______________________________.

6. Polyuria is a symptom of stones lodged in the ureter. TRUE FALSE

7. When kidney stones block the flow of urine and the renal pelvis becomes distended with urine, the condition is known as ____________________ ____________________.

8. You have a patient who is experiencing severe renal colic. The physician has ordered: "IVP in a.m.; Tylenol gr. X--PRN; Demerol 100 mg--PRN--IM; strain all urine; Aqua-K pad to right lower back." Which two orders would you do immediately to relieve your patient?

   a. ____

   b. ____

LEARNING ACTIVITIES - continued

9. Develop a general nursing care plan for a patient with a diagnosis of kidney stones. Discuss your care plan with your instructor.

Patient Problem	Nursing Approach	Rationale

10. A urethral ______________________ is a narrowing of the space within the urethra, usually as the result of scar tissue.

11. To diagnose the above condition, the physician may order a ________________ and ________________.

12. A urethral dilation is a surgical repair of the urethra. TRUE FALSE

13. When the bladder is drained through a catheter in a surgical opening above the pubic area, the catheter is known as a(n) ______________________ tube.

14. Most renal and bladder tumors are malignant. TRUE FALSE

15. One of the most common early symptoms of both renal tumors and bladder tumors that is frequently ignored is ______________________ .

16. Hematuria is a word meaning ______________________ .

17. A(n) ______________________ is a surgical removal of the kidney.

18. The patient with a nephrectomy should be encouraged to deep breathe but never cough, as the incision is close to the diaphragm and coughing may rupture the sutures. TRUE FALSE

19. If the nephrectomy patient has clamps in place, he should not lie on the operative side. TRUE FALSE.

LEARNING ACTIVITIES - continued

20. After a cystectomy, the ureters may be transplanted into a portion of the ileum, which is then brought to the surface of the skin as an ileostomy opening. This procedure is called a(n): ________________________________.

ACTIVITY #6. Cystitis

Directions: Study this material.

Cystitis is the inflammation of the urinary bladder. "Cysto" is the prefix meaning "bladder"; "itis" means "inflammation of." Remember, the bladder is a sterile body cavity. When bacteria, such as e. coli, contaminate the bladder, inflammation of the bladder will occur. Infection may travel down into the bladder from an infected kidney or the ureter. Patients with renal calculi, obstructions, urethral strictures or an enlarged prostate gland (in males) are also prone to cystitis. Cystitis is most often caused by bacteria such as the causative agent of gonorrhea that traveled up through the urethra, from fecal contamination or from the introduction of a nonsterile catheter or cystoscope into the bladder. The urethra is much shorter in a woman than in a man, therefore, cystitis is more common in women because the urethra is more easily traumatized and contaminated. The routine urinalysis will alert the physician to a possible cystitis and a urine for a C & S usually will confirm this diagnosis.

Symptoms

1. Urgency - The patient feels the need to void, although the bladder is not full.

2. Frequency - The patient voids often.

3. Dysuria or painful urination - The patient usually complains of burning on urination.

4. The patient voids in small amounts (oliguria).

5. The patient has a heavy sensation or pain in the bladder or suprapubic area.

6. Urine will have a foul odor, cloudy appearance and may be bloody (hematuria).

As a nurse, you can help the patient with cystitis. The care plan below and on the following page shows the nursing approach you should take.

Patient Problem	Nursing Approach	Rationale
Painful urination.	Warm sitz bath. Physician may also order bladder analgesics.	Help to relax the inflamed urethra and bladder.
	Force fluids.	Dilute bacteria and flush infected urine out of the bladder.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Cystitis is often recurrent.	Teach patient to continue increased intake of fluids.	Keep bladder flushed out.
	Teach careful perineal cleansing to women from front to back after voiding. Wash with soap and water after defecation.	Prevent fecal contamination.
	Encourage patient to shower instead of tub bathe.	Prevent fecal contamination.

ACTIVITY #7. Pyelo/nephr/itis (Can you define this word by its prefix and suffix?)

Directions: Read the following.

Pyelonephritis, the most common kidney disease, is inflammation and infection involving the renal pelvis and the kidney. It is usually a complication resulting from an infection elsewhere in the body. The bacteria reach the kidneys by way of the blood or by traveling up the ureters from the bladder. Urinary obstructions predispose the patient to pyelonephritis since the bacteria are more likely to spread upward when the normal flow of urine is slowed. If pyelonephritis becomes a chronic condition, the nephrons may become permanently scarred and loose their ability to function, resulting in renal failure. The diagnosis of pyelonephritis is usually confirmed with a urine for C & S, either by clean catch or sterile specimen. A CBC will also show an elevated white blood cell count indicating an infection.

Symptoms of pyelonephritis include:

1. High fever and severe chills.
2. Nausea and vomiting.
3. Severe low-back pain that is worse on movement.
4. Urine with foul odor, a cloudy appearance and possibly bloody.
5. Symptoms of cystitis are also present if the bladder is infected.
6. Hypertension results if the disease becomes chronic.

Nursing Care

1. Keep the patient on bedrest.

LEARNING ACTIVITIES - continued

2. Force fluids.
3. Measure and record intake and output. Make sure that the patient maintains an adequate output of at least 1500 cc of urine per day.
4. Prevent constipation with use of laxatives or enemas as ordered.
5. Observe patient for dysuria, urine color and difficulty of urination.

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. Cystitis is the inflammation of the urinary ____________________________ .
2. Cystitis is most often caused by bacteria that travel up through the urethra. TRUE FALSE
3. Cystitis is more common in men than in women since the urethra is much longer and they are more likely to retain urine. TRUE FALSE
4. If your patient has cystitis, what type of urine specimen will you probably have to collect? ____________________________
5. List four common symptoms of cystitis that you should observe in your patient.
   a. ____
   b. ____
   c. ____
   d. ____
6. Because the patient with cystitis is already complaining of urinary frequency and urgency, you should not force fluids. TRUE FALSE
7. You need a physician's order to put the patient on I & O. TRUE FALSE
8. Since cystitis is often recurrent, what three things can you teach a patient with cystitis to help prevent another episode?
   a. ____
   b. ____
   c. ____
9. Inflammation and infection involving the renal pelvis and kidney are symptoms of a disease known as __________________________________.

LEARNING ACTIVITIES - continued

10. If your patient is admitted with symptoms of pyelonephritis, what lab test will help to confirm the diagnosis?

    ____

11. The patient with pyelonephritis usually experiences low-back pain that becomes more painful with movement. TRUE FALSE

12. Because inflammation is so severe, the urine of a patient with pyelonephritis may be bloody. TRUE FALSE

ACTIVITY #8. Glomerulonephritis or Bright's Disease

Directions: Read and study this information. If you have any questions, ask your instructor to answer them or to help you to answer them.

Glomerulonephritis, also known as Bright's disease, is an inflammatory disease involving the glomeruli and affecting both kidneys. The disease is more common in children and young adults and occurs more frequently in men than in women. The exact cause is unknown but it is believed to be the result of an allergic reaction of the glomeruli to bacteria, especially streptococci, that caused an earlier infection somewhere in the body. The glomeruli are the part of the nephron that is responsible for filtering the plasma portion of the blood, which is then absorbed by the Bowman's capsules. If the glomeruli are inflamed, kidney function is seriously impaired.

Diagnostic Tests Ordered by the Physician

1. BUN and serum creatinine: The results of both blood studies will show elevated amounts of urea nitrogen and creatinine.

2. Routine urinalysis will show bloody urine that contains large numbers of red blood cells, white blood cells and large amounts of albumin.

3. Creatinine and urea clearance tests will show less than normal amounts of creatinine and urea excreted in urine.

Symptoms When Kidney Function Is Imparied

1. Oliguria: Remember, the normal urinary output per day is from 1500 cc to 2000 cc; the patient with glomerulonephritis will only produce 50 cc to 200 cc of urine per day. When the glomeruli are not functioning properly, instead of filtering only the plasma portion of the blood, some of the blood cells may also pass through the glomeruli to be absorbed by Bowman's capsule. The urine will then be bloody, smoky or coffee-colored.

2. Hypertension: If the kidneys are not functioning adequately to filter the blood, excess water and electrolytes will accumulate in the blood causing the blood pressure to go up. Because of the high blood pressure, the heart may enlarge and the patient may develop heart failure.

LEARNING ACTIVITIES - continued

3. Edema: Usually first noticed in the ankles and around the eyes. Edema may become generalized, affecting the entire body. The eyes will be almost closed by the puffed eyelids and the limbs will be twice their normal size.

4. Severe headaches, visual disturbances such as spots before the eyes or blindness, and projectile vomiting may be experienced if the edema involves the brain. (Projectile vomiting is very forceful vomiting without necessarily feeling nauseated.)

5. Changes in the levels of consciousness: As cerebral edema increases and the levels of urea, creatinine and uric acid wastes build up in the blood, the patient will become very restless and confused. The patient will eventually become comatose and may have convulsions.

Some patients with glomerulonephritis recover entirely. Some will develop complete renal failure and die after weeks or months of treatment. Others, after what seems like a period of recovery, will develop chronic glomerulonephritis.

Treatment

There is no specific cure for glomerulonephritis. Treatment is usually symptomatic. The physician may order:

1. Antibiotics to prevent infection of the inflamed kidney.
2. Corticosteroids to reduce inflammation.
3. Antihypertensive drugs when the blood pressure goes up.
4. Diuretics for the edema.
5. Bedrest while the blood pressure is elevated and edema is present.
6. A diet low in protein and sodium, high in vitamins and carbohydrates. Creatinine, urea and uric acid are waste products of protein metabolism and are normally excreted by the kidneys. To give the kidneys a rest, the diet will usually be low in protein. While the patient is edematous, the sodium will also be restricted. Carbohydrates will be the chief source of nutrients to provide energy.
7. Fluid restriction while the urinary output is low.

Nursing Care

1. Daily weights and accurate I & O.
2. Good skin care. Change patient's position frequently.
3. Elevate arms on pillow if the patient is in bed. Elevate the legs on a stool if the patient is sitting on a chair to prevent dependent edema.
4. Fowler's or orthopneic position for patients with pulmonary edema.

LEARNING ACTIVITIES - continued

5. Seizure precautions for patients with increasing cerebral edema.

6. Carefully observe the patient for signs of cardiac and renal failure.

ACTIVITY #9. General Information Related to Fluid Balance

Directions: Read the following.

Fluid imbalance occurs when the patient:

1. Has a condition causing loss of fluid (e.g. burns, surgery, hemorrhage, diabetic coma, diarrhea or vomiting).

2. Has a condition involving the pituitary gland, thyroid gland or the adrenal gland (e.g. diabetes insipitus).

3. Has a condition in which the kidneys are affected (e.g. glomerulonephritis).

4. Is receiving diuretics or large quantities of fluids.

5. Is pregnant.

Thirst gives some indication of the amount of fluid intake needed. Water may be replenished in the body by ingestion of foods and fluids (absorption of water is a function of the colon) and intravenous fluids.

Water is normally lost from the body through the lungs, skin, kidneys and gastrointestinal tract. The average adult in a light occupation loses approximately:

1000	cc water from the skin per day
1500	cc water from the kidneys per day
300	cc water from the lungs per day
150	cc water in the feces per day
2950	

Signs and symptoms of fluid imbalance

Dehydration: Thirst, dryness of skin and mucous membranes, poor skin turgor, fever, increased pulse rate, oliguria and highly concentrated urine, constipation, loss of weight, exhaustion and collapse.

This can occur from tube drainage (e.g. T-tube collecting bile), skin, vomiting, diarrhea and dressings.

Unless nausea and vomiting are occurring or it is ordered otherwise, oral fluids should be encouraged:

1. When there is a problem of dehydration.

2. When there is a systemic or urinary infection.

LEARNING ACTIVITIES - continued

3. When there is a problem (actual or potential) of urinary tract calculi.

4. When the patient is receiving diuretics or sulfa drugs.

5. During pregnancy and lactation.

Fluid retention: Sudden weight gain, puffiness of face and hands, swelling of the legs, ankles, feet, abdominal distention, headache, confusion, convulsions, coma and dyspnea.

Types of edema

Pitting: When you push your fingers into the edematous skin of the area, your fingers will leave an indentation. The range for pitting edema is 1+, 2+, 3+ and 4+. One + is mild or slight and 4+ is largely distended.

Dependent: When the patient hangs an extremity over the side of the bed, more fluid will accumulate, making it even larger.

Ascites: Fluid collects in the abdominal cavity.

Pulmonary edema: Fluid collects in the lungs.

Patients should be observed for signs and symptoms of a distended bladder and these should be reported. It may result from:

1. Surgery involving the genitourinary tract.

2. Neurological disease/disorder involving body from the waist to the extremities.

3. Problem of urinary obstruction.

The patient will show signs of:

1. Restlessness

2. Pain

3. Frequent voiding of small amounts.

4. Palpable bladder (distention felt over suprapubic region).

When there is a problem of edema:

1. A daily weight should be taken.

2. Restrict sodium (NA+) intake.

3. Care should be taken to avoid injecting medications into edematous tissue.

4. Care should be taken to encourage good circulation to parts of the body that are edematous (e.g. avoidance of pressure areas).

LEARNING ACTIVITIES - continued

When fluid intake is to be restricted or to be forced, plans should be made for a reasonable distribution of fluids throughout the patient's waking hours.

Do the following exercise using the previous information and fill in the blanks.

1500cc/24 hrs			3000cc/24 hrs		
7-3	_____	cc's	7-3	_____	cc's
3-11	_____	cc's	3-11	_____	cc's
11-7	_____	cc's	11-7	_____	cc's

ACTIVITY #10. Renal Failure and Uremia

Directions: Read the following material.

Renal failure may be either acute or chronic. Acute renal failure, suspected when sudden oliguria or anuria occurs, is caused by shock, burns, crushing injuries, poisonings or severe transfusion reactions. Acute renal failure may also result from the damage to the kidneys with gomerulonephritis, pyelonephritis or obstructive diseases in which both kidneys are involved. Chronic renal failure is a progressive deterioration of kidney function in which renal damage is permanent and ends fatally in uremia. Uremia is a toxic condition associated with the inability of the kidneys to filter and excrete nitrogen wastes, urea, creatinine and uric acid. These wastes act as poisons when allowed to accumulate in the blood. Diagnostic tests include BUN, serum creatinine, urea and creatinine clearance tests.

Symptoms

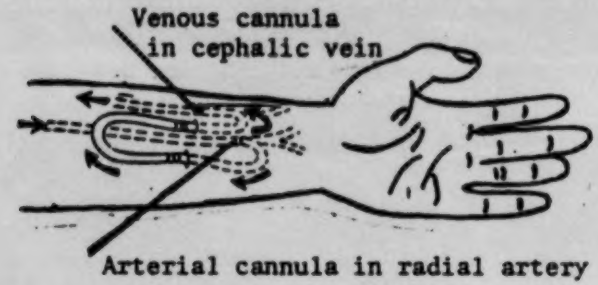
As the patient develops renal failure and progresses to uremia, you will observe the following symptoms:

1. Oliguria and anuria; urine is also bloody.
2. Hypertension.
3. Edema.
4. Headache, nausea, vomiting and persistent hiccoughs develop as the nitrogen wastes are retained in the blood or as cerebral edema develops.
5. Muscle twitching, severe spasms and convulsions due to the electrolyte imbalance and the buildup of nitrogen wastes in the blood.
6. Yellowish discoloration to the skin and perspiration. The perspiration and the breath smell like urine because the wastes are not being excreted by the kidneys and the body will try to get rid of the urine in other ways. The wastes that make urine will be excreted by the lungs and as perspiration.
7. Uremic frost: the waste products of urine excreted in the perspiraton crystalize on the skin as a white powder.

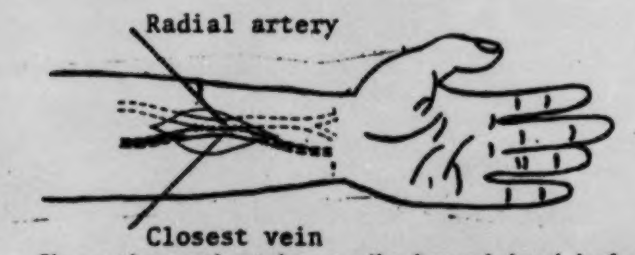
LEARNING ACTIVITIES - continued

9. Ulceration of the mouth from the irritating wastes excreted by the lungs.
10. Changes in the levels of consciousness progressing to coma.

Uremia is fatal unless hemodialysis or a kidney transplant is performed. Hemodialysis is a method of removing from the body the waste products that are normally excreted by the kidneys. An artificial kidney is used to remove the wastes. The patient's blood is continuously circulated from his/her body through coils that are immersed in a special dialyzing fluid. Since the patient's blood contains more wastes than the dialyzing fluid, the waste products will pass out of the blood and into the fluid. Blood is removed from the patient's body through a shunt or fistula that is placed in the radial or brachial artery. The blood is returned to the body through a cannula in a vein. The procedure usually takes from five to ten hours and may be done up to four times a week.


Venous cannula in cephalic vein
Arterial cannula in radial artery

The shunt is placed semipermanently and lies on the surface of the forearm, connecting through small surgical openings in the skin to blood vessels. When not in use they are covered with bandages.



For an AV fistula the incision in the skin is closed and the patient does not need to wear a bandage.

Since the patient is usually heparinized before dialysis to prevent clotting, he/she should be carefully observed after the procedure for evidences of bleeding. You must carefully observe the cutdown site where the arteriovenous cannula is located. Observe the site for symptoms of phlebitis. Listen to the cannula with a stethoscope to make sure the blood is flowing through easily.

Study the nursing care plan of the patient with renal failure on the next page.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Oliguria and anuria.	Daily weights, if possible.	Help to determine the amount of fluid retained by the body.
	Accurate I & O; output may be measured hourly.	Valuable in estimating renal function.
	Record the color of the urine.	
Edema	Frequently massage the skin.	Increase circulation to prevent skin breakdown.
	Change position q 1 to 2 hrs.	Prevent skin breakdown.
	Keep sheets free of wrinkles, crumbs and moisture.	Prevent decubiti.
	Passive range of motion.	Increase circulation to help decrease edema.
	Head of the bed elevated if patient has pulmonary edema.	Relieve dyspnea; fluids will settle in the base of the lungs so patient is able to breathe easier using upper lobes.
Uremic frost	Bathe QID and PRN.	Keep skin clean of frost but do not overtire the patient with long baths.
	You may wash skin with weak vinegar solution. Use 30 cc vinegar to 50 cc water or use diluted hydrogen peroxide (H_2O_2) to remove crusts.	Remove frost; help relieve pruritus (severe itching).
	Avoid overbathing. Provide only enough clothing and bedding to keep comfortably warm.	Excessive warmth makes pruritus worse.
	Keep nails short and clean.	Minimize trauma and infection from scratching.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Foul breath	Frequent mouth care with a combination of ṫ ʒ H_2O, ṫ ʒ h_2O_2 and ṫ ʒ cepacol.	To make patient feel more comfortable.
	Lubricate lips	To keep lips from cracking and/or chapping.

What other patient problems and nursing approaches would you add to this general care plan? Discuss your care plan with your instructor.

Patient Problem	Nursing Approach	Rationale

LEARNING ACTIVITIES - continued

ACTIVITY #11. Continuous Ambulatory Peritoneal Dialysis (CAPD)

Directions: Read the following.

CAPD is another type of dialysis. This procedure can be managed by nursing staffs in smaller hospitals and even by the patient at home. The dialyzing solution or dialysate is passed into the patient's peritoneal cavity through a permanently implanted catheter where the solution remains for a period of time. Through osmosis, impurities or waste products in the blood pass through the peritoneal membrane into the dialysate. The dialysate plus the waste products then pass from the peritoneal cavity into drainage bottles, which are then discarded. This treatment can continue for 12 to 24 hours.

ACTIVITY #12. Transplantation

Directions: Read the following.

Transplantation involves replacing the nonfuctioning kidney with a nondiseased organ donated from a living relative or a cadaver. This procedure has become more acceptable and much safer in the past several years.

The most significant problem in kidney replacement is rejection. The possibility of rejection has decreased due to the use of long-term immuno-suppressive drug therapy and tissue typing. The chance of rejection is lessened if the donor is a sibling or a family member with the same blood type rather than an unrelated donor or cadaver. The possibility of rejection may remain for months or even years after the surgery. Patients with kidney transplants must take immuno-suppressive drugs to prevent rejection, diuretics to prevent retention of fluid, antihypertensives to control blood pressure, antibiotics to prevent urinary tract infections and antacids to protect the stomach lining from effects of the immuno-suppressive drugs (steroids).

ACTIVITY #13. Reveiw Exercise

Directions: Answer the following questions about the information you have read by filling in the blanks or by circling "true" or "false."

1. Glomerulonephritis is also known as ______________________________ .

2. Glomerulonephritis is believed to be an allergic reaction of the glomeruli to bacteria, especially streptococci. TRUE FALSE

3. The glomeruli are the part of the nephron responsible for which step in the three-step process for urine production?

   ____

4. BUN stands for ____ .

LEARNING ACTIVITIES - continued

5. The nitrogen wastes that are filtered out of the blood and excreted by the kidneys include ____________________, ____________________ and uric acid.

6. Two clearance tests of urine that help to determine kidney function and that are used to diagnose glomerulonephritis and renal failure are ________________ and ________________ clearance tests.

7. Routine urinalysis of a patient with glomerulonephritis and kidney failure will show large numbers of red blood cells, white blood cells and large amounts of ____________________.

8. What is the definition of oliguria? ____________________

9. What is the definition of anuria? ____________________

10. Normal urinary output is from ____ cc to ____ cc per day.

11. Another word for high blood pressure is ____________________ .

12. Patients with glomerulonephritis seldom develop high blood pressure because the kidneys have no effect on the blood vessels or on the heart. TRUE FALSE

13. If you press the skin of an edematous leg and your fingers leave a mark, you are observing a type of edema known as ________________ edema.

14. When fluid collects in the abdominal cavity, it is known as ____________ .

15. A patient with glomerulonephritis or renal failure may develop cerebral edema. List four symptoms that you would observe to determine if your patient has developed cerebral edema.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

16. Very forceful vomiting without necessarily feeling nauseated is known as ________________ vomiting.

17. A patient with glomerulonephritis or renal failure will be on what type of a diet?

    ____

18. You should force fluids on a patient in renal failure since his urinary output is low. TRUE FALSE

LEARNING ACTIVITIES - continued

19. A toxic condition develops when nitrogen wastes accumulate in the blood is known as ______________________________.

20. A patient whose kidneys are not functioning well enough to filter urinary wastes out of the blood may get rid of these wastes by using other excretory organs. What are the two other organs that may help to excrete urine wastes?

    a. ______________________________

    b. ______________________________

21. The white powder that crystalizes on the skin of the patient with renal failure is known as ____________________ ______________________________.

22. Another word for severe itching is ______________________________ .

23. List two nursing approaches taken when caring for severe itching on a patient with renal failure.

    a. ______________________________

    b. ______________________________

24. When the blood of a patient in renal failure is circulated through an artificial kidney, the procedure is known as ______________________________.

25. List three nursing approaches taken when caring for a patient with edema.

    a. ______________________________

    b. ______________________________

    c. ______________________________

26. The main problem in kidney transplantation is the ______________________________ ______________________________.

ACTIVITY #14. Nursing Assessment Involving the Urinary System

Directions: Read the following.

When reviewing a health history, it is important to be sure that the patient understands the questions being asked. In discussing problems involving the genitalia, the patient may "forget" or deny symptoms because of anxiety. Questions you might ask:

1. "Is there any history of kidney disease in your family?"

2. "Do you have any pain when you pass your water?"

LEARNING ACTIVITIES - continued

3. "Are you having hesitancy, straining, incontinence, bloody urine, large or small amounts of urine?"
4. "Have you ever had a urinary tract infection before?"

Describe the patient's urine: color, amount, consistency and any odor present.

Kidney disease ranks as the fourth greatest health problem and is a major cause of death in the United States.

The five warning signs of kidney disease:

1. Swelling of parts of the body.
2. Lower back pains.
3. Burning or abdominal sensation during urination.
4. Bloody or coffee-colored urine, changes in the pattern of urination, increased frequency.
5. Puffiness around the eyes, particularly in children.

ACTIVITY #15. Clinical Assignments

Directions: Read the following objectives that are specific to the care of patients with diseases of the urinary system. You are responsible for their care, as well as the general clinical objectives, when assigned to such patients.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:
    a. Pain
    b. Fear
    c. Anxiety
    d. Urinary distress
2. Demonstrate the nursing procedure for diagnostic tests given to your assigned patients and determine if the test results were within normal range. Include:
    a. Urinalysis
    b. IVP
    c. KUB

LEARNING ACTIVITIES - concluded

   d. BUN
   e. Urea clearance
   f. Creatinine clearance
   g. Serum creatinine
   h. Cystoscopy
   i. Retrograde pyelogram
   j. Accurate I & O

3. Demonstrate nursing care of patients with therapy specifically related to the urinary system. Include:
   a. Catheterization
   b. Catheter care
   c. Patient care following catheter removal
   d. Irrigation of catheter
   e. Continuous bladder irrigation
   f. Surgical conditions related to the urinary system
   g. Accurate intake and output to determine if fluid is in relative balance, check fluid balance.

4. Demonstrate teaching of patient regarding:
   a. Fluid balance
   b. Means of reducing or avoiding urinary tract infections

unit 17

NURSING CARE OF ADULTS

MODULE F - Nursing Care for Patients With Diseases of the Endocrine System

RATIONALE

To give safe, effective nursing care to a patient with a disease of the endocrine system, you must know the physiological and anatomical changes that occur and the signs and the symptoms to be observed.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Identify the glands and the hormones that affect the endocrine system.
2. Identify the definition, purpose, location and conditions affecting the glands and the hormones related to the endocrine system.
3. Identify diagnostic tests and procedures ordered by the physician for disorders affecting the endocrine system.
4. Identify the meaning, purpose and nursing action for diagnostic tests related to the endocrine system.
5. Identify the conditions, causes, signs and symptoms and nursing care given a patient with diabetes mellitus.
6. Verbally describe or name the nursing action, patient symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the endocrine system.
7. Demonstrate appropriate nursing care following the objectives in Activity #10 when given a clinical assignment of caring for a patient with a disorder of the endocrine system.

LEARNING ACTIVITIES

Directions: The information you need to complete Module F is included in this module and in the reading assignment from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the endocrine system, review Unit 4, Module H and view the Trainex, "Diabetes Mellitus." Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material found in this module and Unit 4, Module H. There are many diseases common to the endocrine system; however, the diseases discussed in this module are the most common. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to the Endocrine System

Directions: Read and study Chapter 19, "Nursing the Patient with Endocrine Problems." Now review Unit 4, Module H. After reviewing Unit 4, answer the questions below by filling in the blanks or by circling "true" or "false." Answers can be found in Unit 4.

1. The endocrine glands secrete chemicals called ______________, which coordinate the functions of all cells, tissues, organs and systems.

2. Endocrine glands are also called ____________________ glands because they secrete their secretions directly into the bloodstream.

3. Which types of glands are "ductless" glands? _____ Exocrine _____ Salivary glands _____ Sweat glands.

4. Other exocrine glands are the _____________ glands, the ___________ and the ______________.

5. One gland in the body is both an endocrine gland (because it secretes hormones into the bloodstream) and an exocrine gland (because it secretes enzymes through a duct into the duodenum). This gland is the ______________________.

6. The _________________ gland is called the "master gland" because its hormones regulate the secretions of almost every other gland in the body. Because this gland is so important, it is the only gland protected by bones and is located in a small, bony cavity at the base of the brain.

7. The pituitary gland is divided into two lobes, the _____________ lobe and the ____________ lobe.

8. Remember that the hormones that are produced by the anterior pituitary will end with the suffix - trophic. The prefix will be the name of the gland that this hormone stimulates. List the four major hormones produced by the anterior pituitary gland.

   a. ___________________________

   b. ___________________________

   c. ___________________________

   d. ___________________________

9. Another name for the growth hormone is ____________________ hormone.

10. Two of the major gonadotrophic hormones are ______________- hormones and FSH, which stands for _____________ ________________ ________________.

LEARNING ACTIVITIES - continued

11. Which of these hormones stimulates the maturing graafian follicle to secrete estrogen? ______________________________

12. Which of these hormones causes ovulation? ______________________

13. The ______________ hormone produced by the anterior pituitary stimulates the thyroid gland to grow and to produce its hormone.

14. ACTH or ________________ hormone stimulates the adrenal cortex to grow and to secrete its hormones.

15. The posterior pituitary produces ADH or antidiuretic hormone.
TRUE FALSE

16. Define diuresis: ______________________________

____

17. How does ADH affect the production of urine? ____________________

____

18. The hormone produced by the posterior pituitary that stimulates the contractions of the uterus is ________________, also known as Pitocin.

19. Which of the hormones produced by the pituitary gland may be given to a pregnant woman to induce labor? ____________________

20. The thyroid gland needs ______________ to produce its hormone ______________.

21. The hormone produced by the thyroid gland regulates the water and the salt usage by the body. TRUE FALSE

22. Define metabolism: ______________________________

23. There are four small glands located within the posterior lobe of the thyroid gland. These glands are called the ____________________ glands.

24. These glands secrete a hormone called parathormone that is responsible for the regulation of phosphorus and ____________________ metabolism.

25. Calcium is very necessary for adequate bone formation. Metabolism of calcium in exactly the right amounts is also very necessary to insure the proper stimulation of skeletal muscles by the nerves. Lack of calcium because of inadequate amounts of parathormone makes nerve cells overactive. They constantly bombard the muscles with so many impulses that the muscles go into a spasm. This constant spasm of the muscles is called ________________.

26. Microscopic cells located in the pancreas that are responsible for secreting the hormone, ________________, which controls the body's use of sugar, are the ____________ of ________________.

LEARNING ACTIVITIES - continued

27. Insulin changes the sugar in the bloodstream so that it can be used by the body. TRUE FALSE

28. When too little insulin is produced by the body, the blood level of glucose goes (up, down). This is known as ____________________.

29. There are two glands located on top of each kidney. These are called the ______________ glands.

30. The outer portion of this gland is called the cortex and it secretes a group of hormones called corticoids. TRUE FALSE

31. The hormones produced by the adrenal (cortex, medulla) help to regulate fluid and electrolyte balance.

32. The adrenal medulla secretes two hormones, ______________ and ____________, which help to prepare the body for "fight" or "flight."

33. If you are prepared to meet an emergency situation, you will be more alert, will breathe faster to get more oxygen to tissues and your blood pressure will go up. What will also happen to your heartbeat and to the level of sugar in your blood?

34. The term __________ refers to the male and the female sex glands.

35. The male sex gland, the ______________, produces a hormone called ______________.

36. The female sex gland, the ______________, produces two hormones, ____________ and ______________.

37. Glands with ducts are known as ______________ glands.

38. Glands without ducts are called ______________ glands.

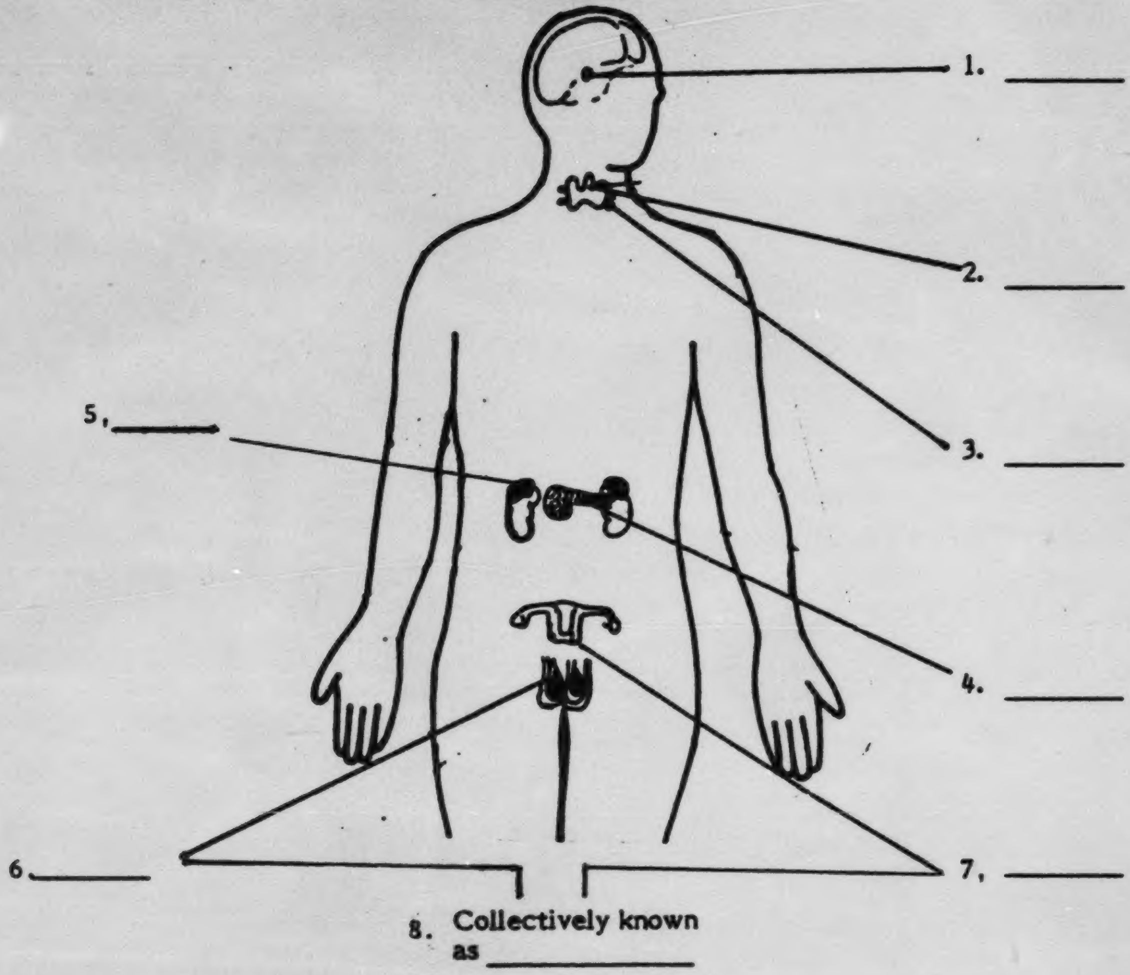
39. What function does the pineal gland have?

40. What function does the thymus have?

LEARNING ACTIVITIES - continued

41. Label the eight endocrine glands in the diagram below.

Endocrine Glands



ACTIVITY #2. Conditions Affecting the Pituitary Gland

Directions: Read this information.

Dwarfism

The somatotrophic hormone or growth hormone is secreted by the anterior pituitary in large amounts from birth until adolescence. At the time of adolescence the production of growth hormone diminishes and the anterior pituitary starts to produce the gonadotrophic hormones. Somatotrophic hormone functions to promote development and enlargement of all bodily tissue.

LEARNING ACTIVITIES - continued

If the anterior pituitary hyposecretes somatotrophic hormone at birth, the person will be a dwarf. The dwarf is well-proportioned but remains childlike in all physical respects. The organs and bones fail to grow and will not develop sexually. Intelligence is not affected. He/she may never grow any taller than twice the height of a newborn baby and will always have a childish face, although the skin may wrinkle eventually.

Treatment

Treatment with thyroid and gonadal hormones has produced some growth in pituitary dwarfs. The best results have been achieved with somatotrophic hormone therapy; however, the supply of this hormone is very limited.

Gigantism

Hyperfunction of the anterior pituitary with an overproduction of growth hormone before puberty will cause a condition known as gigantism. The child will grow very rapidly but, will be well-proportioned. Growth stops at adolescence with the production of the gonadotrophic hormones. Although the height varies, the giant may grow as tall as eight feet.

Acromegaly

The overproduction of somatotrophic hormone after puberty will cause a condition known as acromegaly. This hyperfunction is usually due to a tumor affecting the pituitary gland. After adolescence, the growing parts of most bones have fused and are not capable of growing longer regardless of the amount of somatotrophic hormone available. The bones of the hands, feet, jaws, and forehead, however, will continue to grow. Growth hormones will cause an increase in size of all other soft tissues and internal organs.

Signs and Symptoms

The symptoms you will observe in a patient with acromegaly.

1. No increase in height but the hands and the feet become very large, the forehead broadens and protrudes, and the jaws grow excessively long causing the chin to protrude.
2. The nose and the ears grow large, the lips enlarge and thicken and the tongue may grow so large that it must protrude from the mouth.
3. All internal organs such as the heart, lungs, liver, spleen and the intestines may grow two to five times their normal size.
4. The patient may have headaches and may eventually become blind from the pressure of the tumor.
5. Death may result directly from action of the tumor or death may occur because of cardiac failure.

LEARNING ACTIVITIES - continued

Treatment

Treatment usually consists of radiation (x-ray) treatments to the pituitary. Because the pituitary gland is very hard to reach and these patients are usually poor surgical risks, surgery to remove the tumor is done only if the tumor is large enough to cause loss of vision.

Diabetes Insipidus

Diabetes insipidus is a disease caused by failure of the posterior lobe of the pituitary gland to secrete antidiuretic hormone. Primary diabetus insipidus is a rare disease, but its symptoms are seen fairly frequently since they may occur when a tumor develops in the gland and because they follow hypophysectomy or irradiation of the pituitary gland.

Antidiuretic hormone (ADH) is produced by the posterior lobe of the pituitary gland and works on the kidneys to regulate the reabsorption of water back into the bloodstream. The kidneys filter approximately 150,000 cc of water a day. Of that, only 1500 to 2000 cc is excreted as part of the urine. ADH is responsible for allowing the rest of that water to pass out of the kidney tubules and back into the blood. Diabetes insipidus is a condition that results because of a deficiency of ADH. The cause is unknown but may be associated with head injury, brain tumor or radiation therapy of the pituitary gland.

Signs and Symptoms

The major symptom is a copious increase in urinary output, known as polyuria. The patient may void from 15,000 to 40,000 cc of urine per day. The urine will be very dilute with a specific gravity of 1.001 to 1.005. Since the patient is dehydrated, he/she is intensely thirsty and must increase fluid intake. The patient should not try to control urinary output by limiting fluids.

Treatment

The patient usually takes the antidiuretic hormone, either I.M. or by inhalation, for the rest of his/her life, to keep the urinary output controlled.

ACTIVITY #3. Diagnostic Tests for Thyroid Function

Directions: Read the following material.

Basal Metabolic Rate (BMR)

The BMR is a test done to determine the activity of the thyroid gland. Remember, thyroxine produced by the thyroid gland controls the rate of metabolism by the cells. The cells require oxygen in order to metabolize food for energy. The term "basal metabolism" refers to the amount of oxygen used by a person who is at rest. The test is done in the morning after a night of sleep while the patient is still in bed. The patient's temperature must be normal since an elevated temperature increases the body's need for oxygen. The patient is also NPO for about 12 to 14 hours before the test since digestion also increases the use of oxygen. The amount of heat or energy produced by the body is computed from the amount of oxygen absorbed. A BMR reading above normal may mean that the thyroid gland is overactive while a reading below normal may indicate that the gland does not produce enough thyroxine.

LEARNING ACTIVITIES - continued

The normal value for BMR is -10 to +10 ml. of O_2 consumed by the body per minute at rest.

Protein-bound Iodine (PBI)

Protein-bound iodine is one of several blood tests used to evaluate thyroid function. If the amount of PBI found in the blood is above normal limits, the test indicates an overactive thyroid gland and a decreased amount may indicate hypothyroidism. The patient is NPO at midnight until the blood is drawn. The normal value for PBI is 3.6 - 8.8 mg/100 ml.

T_3 (Triiodothyronine) and T_4 (Total Thyroxine) Uptake Tests

In contrast to the two previous tests, these tests are generally performed in a test tube on a sample of serum obtained from the patient and do not require the administration of radioactive agents to the patient. These hormones are amino acids that have the unique property of containing iodine molecules bound to the amino acid structure. They are synthesized and stored by the cells of the thyroid gland until needed for release into the bloodstream.

Normal values:

T_3: 24 - 36%

T_4: 4 - 11%

Radioactive Iodine Uptake Test (RAIU)

This is another diagnostic test that determines the activity of the thyroid gland. The patient is given a dose of radioactive iodine. The scintillator is held over the gland to measure the amount of iodine the thyroid has taken up or out of the bloodstream after 24 hours. Patients with hyperthyroidism accumulate a very high percentage of iodine, some as high as 90% in the gland while patients with hypothyroidism have a much lower intake. The normal thyroid gland will accumulate from 5% to 35% of the radioactive iodine within 24 hours.

Thyroid scanning helps to determine the size and the shape of the thyroid gland. It also differentiates malignant and nonmalignant tissue. The patient ingests a radioactive iodine. Since iodine is used by the gland to produce thyroxine, it is absorbed by the thyroid. An instrument known as a scintillator is passed back and forth across the neck to record a picture of its absorption. Areas of tissue that are malignant will not absorb the iodine as well as nonmalignant tissue.

Disease	BMR	PBI	T_3	T_4	RAIU
Hypothyroidism	↓	↓	↓	↓	↓
Hyperthyroidism	↑	↑	↑	↑	↑

↑ - increased

↓ - decreased

LEARNING ACTIVITIES - continued

Directions: Answer the following questions to help you review what you have just read by filling the blanks or by circling "true" or "false."

1. BMR is an abbreviation that stands for __________ __________ __________.
2. A BMR reading above normal may mean that the adrenal gland is overactive. TRUE FALSE
3. Because the body's need for oxygen increases with digestion, the patient having a BMR must be NPO for 12 to 14 hours before the test. TRUE FALSE
4. A __________ __________ is a test used to decide if there is any malignant tissue in the thyroid gland.
5. The thyroid gland uses __________ to make thyroxine.
6. To do a thyroid scan and an uptake test, the patient must drink a dose of radioactive iodine. TRUE FALSE
7. If the patient has a low uptake of iodine with the radioactive iodine uptake test, he may be diagnosed as __________.
8. A blood test used to evaluate thyroid function is abbreviated PBI, which stands for __________ __________ __________.

ACTIVITY #4. Conditions Affecting the Thyroid Gland

Directions: Read the following material.

Hypothyroidism

The thyroid gland is responsible for the secretion of thyroxine that regulates the rate of metabolism or the production of energy for the body. If the gland does not secrete enough thyroxine in fetal life, the infant will be born with a condition known as cretinism. A cretin is usually mentally retarded and dwarfed. The arms and legs are usually short and stubby. There is very little neck and the face is round with wide-set eyes. The tongue may be large and protruding, causing feeding difficulties. The cretin is usually born with very dark and coarse hair. The skin is yellow and scaly. The infant may have a hoarse cry. If treatment is given early in infancy, some improvement may be seen, however the condition is not completely reversible.

Myxedema is a condition that results from hyposecretion of thyroxine in an adult. Diagnosis may be based on the results of a BMR, PBI, T_3 and T_4 or RAIU test.

Signs and Symptoms

As you study and observe the patient with a diagnosis of hypothyroidism or myxedema, remember that the symptoms are due to a depressed metabolic rate. The patient may show the following symptoms:

1. Lethargy, lacking energy, may doze off frequently during the day. (Remember thyroxine is responsible for the production of energy.)

LEARNING ACTIVITIES - continued

2. Mentally dull, forgetful.
3. Face has a masklike, unemotional expression.
4. Speech is slow, hoarse and slurred.
5. Intolerant of cold, skin is dry and cool to touch. (If metabolism is slow, the production of heat is diminished.)
6. Slow pulse, decreased temperature.
7. Hair is dry and coarse and tends to fall out.
8. Constipation.
9. Tendency to gain weight although appetite is poor.
10. Face is usually puffy, especially around the eyes, the lips are swollen and the tongue is large.

Treatment and Nursing Care

Myxedema is treated by replacement therapy. The patient usually must take the thyroid extract for the rest of his/her life. When the condition is diagnosed early, replacement therapy reverses it rapidly.

Study the nursing care plan below and on the next page for a patient with myxedema.

Patient Problem	Nursing Approach	Rationale
Lethargic, lacks energy	Provide for periods of rest between periods of activity.	Conserve energy.
	Do not rush. Allow the patient to do things for him/herself providing assistance when necessary.	Patient's thought processes are slow, he/she will not respond immediately and is incapable of moving quickly.
	Encourage activity but provide assistance; take short walks; have patient sit in chair frequently but for short periods.	
	Provide assistance with bath if necessary.	

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Intolerant of cold.	Keep the room warm.	Patient does not generate heat.
	Do not place bed where there might be drafts such as next to a fan or an open window.	
	Provide extra blankets, wear warm socks.	The feet are the most distal in peripheral circulation.
Weight gain, poor appetite, constipation.	Encourage a diet low in calories, high in protein.	Slow metabolism cannot burn calories as rapidly as normally; protein will be more slowly metabolized.
	Provide five small meals instead of three large meals.	Small meals may be more appetizing, help to conserve energy; patient may have only enough strength to finish a small meal.
	Provide foods within diet limitations that the patient likes.	To help stimulate appetite.
	Encourage fluids, foods high in roughage.	To prevent constipation.
	Find out what the patient's normal BM pattern was before developing myxedema and try to establish the same pattern.	May need to be regulated with stool softeners or laxatives.
Very susceptible to hypnotics and sedatives.	Before giving, check dosages. Should not give more than 1/2 or 1/3 the usual dose.	Usual dose may cause abnormally deep sleep and respiratory depression.
	Of drugs given, check patient frequently for respiratory depression, notify physician if respirations change and are less than 10 per minute.	May develop respiratory failure.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
May develop myocardial infarction in early stages of thyroid therapy.	Observe for and immediately report to physician symptoms of angina pectoris, dyspnea or changes in pulse rate.	Patients with myxedema will have coronary arteriosclerosis to some degree. As long as metabolism is below normal, the heart is not overworked. Thyroid therapy improves metabolism and will impose an additional strain on the heart.
	Check vital signs q4h and PRN.	Changes in blood pressure and pulse rate may indicate myocardial damage.

Hyperthyroidism

Hyperthyroidism is also known as Graves disease, exophthalmic goiter, toxic goiter or thyrotoxicosis. In hyperthyroidism, the thyroid gland produces excessive amounts of thyroxine increasing the patient's metabolic rate. The cause is unknown but the condition most often appears spontaneously after emotional or physical stress, infection or pregnancy. However, it may result from hypertrophy, neoplasms, inflammatory processes or autoimmune disorders. Hyperthyroidism affects women five times more frequently than it affects men. An elevated BMR, radioactive iodine uptake test and PBI help to confirm the diagnosis.

Signs and Symptoms

Remember, in observing the patient with hyperthyroidism, the symptoms are due to an increased metabolic rate. Symptoms include:

1. Nervousness, restlessness, constant moving. Excessive amounts of thyroxine are produced leading to excessive energy.
2. May have fine tremor of the hands.
3. Emotional unstability: may be laughing one minute, irritable and crying the next minute.
4. Intolerant of heat, heavy perspiration, flushed, soft and moist skin. (High metabolism results in high production of body heat.)
5. Increased pulse rate (ranges between 90 and 160 per minute), elevated systolic blood pressure but not diastolic blood pressure. Increased demands placed on the heart may result in cardiac failure.
6. Complaints of feeling weak, easily fatigued.
7. Amenorrhea.

LEARNING ACTIVITIES - continued

8. Changes in bowel habits, usually has diarrhea.
9. Exophthalmos or bulging eyes.
10. Somewhat enlarged thyroid gland.

Treatment

Treatment is aimed at controlling thyroid activity and may include:

1. Antithyroid drugs.
2. Radioactive iodine given in dosages designed to destroy thyroid tissue. Hypothyroidism, which may develop many years after treatment, is a major complication.
3. Surgery. A subtotal or partial thyroidectomy or removal of about five-sixths of the thyroid tissue is usually performed. A total thyroidectomy, removal of all of the thyroid gland, may be performed if any thyroid tissue is malignant.

Nursing Care

Nursing care after a thyroidectomy for Jane Smith is outlined in the following nursing care plan. Feel free to write in any suggested nursing approach and rationale not already included.

Patient Problem	Nursing Approach	Rationale
Pain or soreness due to neck incision	Semi-Fowler's position with pillows under head, neck and shoulders.	To provide firm support.
	Move carefully, supporting the patient's head; teach patient to use her hands to support her head when raising herself to a sitting position.	To prevent tension on the sutures.
	Avoid up and down, side-to-side head movements until 2 to 3 days postoperatively.	To prevent tension on the sutures.
	Place overbed table (with tissues, water, emesis basin, wall light, etc.) within easy reach in front of patient.	Patient will not have to turn head to search.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
May have difficulty swallowing.	Do not give fluids until the swallow reflex is present.	To prevent aspiration.
May suffer from hoarseness or be unable to speak.	Observe and report any symptoms.	May be due to vocal cord paralysis, from nerve damage or edema.
	Encourage patient not to talk.	Voice rest helps to prevent laryngeal edema.
May have difficulty breathing.	Inspect dressing for bleeding every hour, outline drainage on dressing with ink and time it; check sides and back of neck too, since blood may ooze around to the back.	Thyroid tissue is very vascular and may hemorrhage; accumulation of blood presses on the trachea causing an obstruction.
	Check vital signs q2h.	Elevated pulse and decreasing blood pressure may indicate hemorrhage.
	Observe and report neck swelling.	Edema or accumulation of blood may disturb tissue and press on the trachea.
	Be alert for complaints of feeling full or tight at the incision site; loosen dressing if necessary.	May indicate edema or hemorrhage.
	Watch for and immediately report restlessness, respiratory distress, noisy breathing, cyanosis and hoarse voice.	Symptoms of respiratory obstruction.
	Keep tracheostomy set at bedside.	For emergency tracheotomy.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Tetany	Observe for and immediately report involuntary spasms following voluntary movements, muscular twitching of face, hands and legs, cardiac arrhythmia and convulsions. Have IV calcium gluconate immediately available at bedside.	Tetany may be a complication because of any injury to the parathyroid glands causing a disturbance of calcium metabolism.
Thyroid crisis or storm.	Observe for and immediately report persistent vomiting or diarrhea, delirium and exaggerated symptoms of hyperthyroidism.	It is a life-threatening complication of surgery that may occur within the first 12 hours postoperatively.
	Check vital signs q2^{o}	Temperature may be elevated as high as 106 degrees F, may develop cardiac arrhythmia and tachycardia of over 130.

Simple Goiter

A simple goiter, also called a nontoxic or endemic goiter, is an enlargement of the thyroid gland without the symptoms of hyperthyroidism. The enlargement is usually caused by a deficiency of iodine in the diet. The thyroid gland uses iodine to produce thyroxine. If thyroxine is not being produced in the necessary amounts, the body tells the thyroid gland to work harder. In an effort to meet the body's demands for thyroxine, the gland gets larger.

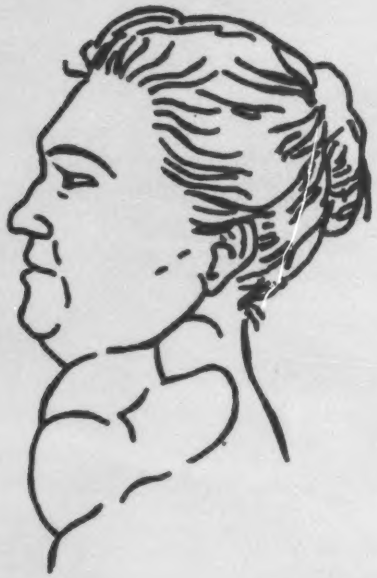
Endemic goiters are more common in girls and usually occur just before puberty because of the increased physiologic demands of puberty and other bodily changes, after which it may completely disappear.

Signs and Symptoms

Symptoms are the result of the enlargement and include:

1. Gradual increase in size of the gland. (See picture on following page)
2. Sense of fullness in the throat with mild neck discomfort.
3. Difficulty in swallowing if the gland is large enough to press on the esophagus.
4. Difficulty in breathing if the gland presses on the trachea.
5. Chronic cough.

LEARNING ACTIVITIES - continued



Treatment

The gland will usually reduce in size after many months of treatment with oral iodine or thyroid hormone. Surgical removal may be necessary if there is pressure on the trachea.

Prevention

Iodine is found naturally in the soil and water in many parts of the country and is, therefore, found in foods in ample amounts to supply the body's needs. Some areas, principally the midwest, have deficiencies of this natural iodine. The introduction of iodized salt provides enough iodine in the diet to counteract any lack in other foods. Encourage foods rich in natural iodine, such as leafy vegetables and seafood.

ACTIVITY #5. Conditions Affecting the Parathyroid Glands

Directions: Read the following information.

Hyperparathyroidism

Parathormone produced by the parathyroid glands is responsible for regulating the blood level of calcium and phosphorus. In hyperparathyroidism there is an overproduction of parathormone that results in a higher concentration of calcium and phosphorus in the blood. This excess calcium and phosphorus is excreted in the urine. The parathormone takes the calcium and phosphorus from the bones. Normal value for calcium is 8.5 - 10.5 mg/100 ml. and for phosphorus is 3.0 - 4.5 mg/100 ml.

Too much calcium in the blood is known as hypercalcemia, whereas too little calcium in the blood is hypocalcemia. Too much phosphorus in the blood is called hyperphosphatemia and too little phosphorus is hypophosphatemia.

Signs and Symptoms

Remember, proper blood levels of calcium are necessary for good neuromuscular function. If the level of calcium goes down, the nerves become overactive causing muscular tetany. If the blood level of calcium is high, the nerves are depressed and nonresponsive, which results in:

1. Muscle weakness
2. Fatigue and apathy
3. Nausea and vomiting

LEARNING ACTIVITIES - continued

4. Constipation

5. Cardiac arrhythmia - the heart is a muscle, too.

Since the calcium is being taken from the bones and excreted in urine, the patient will also have:

1. Skeletal tenderness.

2. Pain on bearing weight.

3. Bones that break with little or no trauma (pathological fractures).

4. Kidney stones from the calcium deposits.

Treatment and Nursing Care

The treatment for hyperparathyroidism is surgical removal of the parathyroid glands that are enlarged or abnormal. Postoperative nursing care is very much the same as that for a thyroidectomy patient. The patient must be carefully observed for signs of tetany. Remember, also, that the patient is prone to fractures and must be handled carefully.

Hypoparathyroidism

Hypoparathyroidism is the underproduction of parathormone causing a decrease in the level of calcium in the blood and an increase in phosphorus. The condition is a possible complication of a thyroidectomy because of manipulation or accidental removal of the parathyroid glands during the thyroidectomy. Remember, decreased blood calcium causes the nerves to become irritable and overactive and constantly bombard the muscles, causing tetany. Tetany is characterized by tremor and spasmodic or incoordinated contractions occurring with or without efforts to make voluntary movements.

Signs and Symptoms

1. Muscular tetany

2. Involuntary, jerky spasms following voluntary movements

3. Facial twitching

4. Cardiac arrhythmia

5. Convulsions

6. Death as the respiratory muscles become tetanic.

LEARNING ACTIVITIES - continued

Treatment

The physician may order:

1. Calcium gluconate given IV at first and then by mouth.

2. Vitamin D. Vitamin D is necessary for the absorption of calcium from the intestine.

3. Diet high in calcium and low in phosphorus. Milk, milk products and egg yolk should be restricted because they contain high levels of phosphorus.

ACTIVITY #6. Conditions Affecting the Adrenal Glands

Directions: Read the following information.

Addison's Disease

Addison's disease is a disease that results from hypofunction of the adrenal cortex of the adrenal glands. This hypofunction may be due to atrophy from unknown causes, atrophy from long-term use of cortisone drugs that suppress the production of ACTH, and from infections that may have destroyed the adrenal cortex. Frequently, Addison's disease is discovered after the patient has experienced an injury, surgery, infection or other stresses to the body. It may also be an autoimmune process. The adrenal cortex produces a group of hormones called corticoids that are necessary for life. Three classifications of corticoids include:

1. Glucocorticoids: Necessary for the metabolism of proteins, fats and carbohydrates.

2. Mineralcorticoids: Concerned with sodium and water retention and potassium excretion.

3. Androgens: male sex hormones.

Signs and Symptoms

1. Nausea, vomiting, anorexia, diarrhea, abdominal pain and other common gastrointestinal symptoms.

2. Muscular weakness, fatigue and weight loss from altered metabolism of foods.

3. Low blood sugar due to difficulty in converting protein foods into glucose resulting in nervousness, increased perspiration, headache and trembling.

4. Low blood sodium and high blood potassium, dehydration, mineralcorticoids are concerned with solution of sodium and water and excretion of potassium.

5. Hypotension.

6. Generalized dark pigmentation of the skin and a decrease in hair growth.

Treatment

Addison's disease is usually treated by replacement therapy with steroids. The importance of taking the medication and avoiding excessive stress to prevent serious complications should be emphasized.

Addison crisis

Addison crisis is a serious exacerbation of the disease. It is marked by cyanosis, fever and the classic signs of shock: pallor, apprehension, rapid weak pulse, rapid respirations and low blood pressure. In addition, the patient may complain of headache, nausea, abdominal pain and diarrhea, and show signs of confusion and restlessness. It can result for overexertion, exposure to cold, acute infections, a decrease in salt intake or diarrhea. When this occurs, immediate treatment is directed toward combating shock and giving hydrocortisone intravenously.

Cushing's Syndrome

Cushing's syndrome is a condition resulting from hyperfunction of the adrenal cortex with an overproduction (hyperplasia) of the corticoids. The syndrome may be due to a tumor involving the adrenal cortex or the pituitary gland, overgrowth of the adrenal cortex or may be the result of excessive use of cortisone or ACTH therapy.

Signs and Symptoms

1. Moonface and "buffalo hump" on the back of the neck and a heavy (pendulous) abdomen resulting from the redistribution of fat.

2. Thin arm and legs due to increased metabolism of protein.

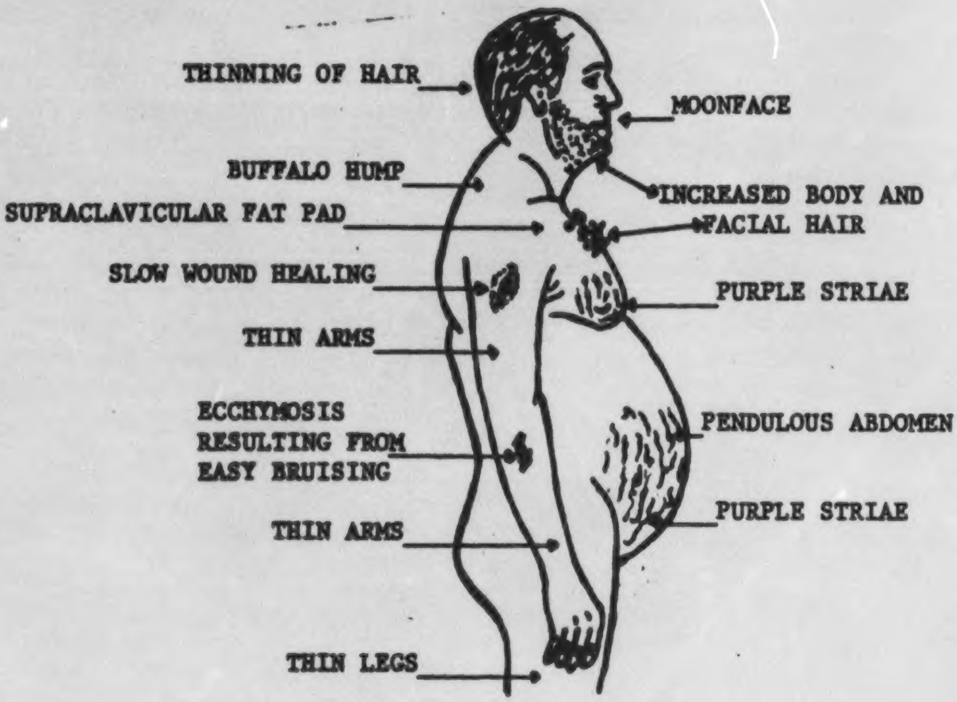
3. Skin is very thin and easily bruised, striae or purplish stretch marks develop.

4. Personality changes.

5. Susceptible to infections; wounds are slow to heal.

6. Development of masculine traits in a woman such as excessive growth of hair on the face and the body, breasts become smaller, menses cease, the clitoris may enlarge, and a deep voice develop from an overproduction of aldosterone.

LEARNING ACTIVITIES - continued


THINNING OF HAIR
MOONFACE
BUFFALO HUMP
SUPRACLAVICULAR FAT PAD
INCREASED BODY AND FACIAL HAIR
SLOW WOUND HEALING
PURPLE STRIAE
THIN ARMS
ECCHYMOSIS RESULTING FROM EASY BRUISING
PENDULOUS ABDOMEN
PURPLE STRIAE
THIN ARMS
THIN LEGS

Treatment

Whenever possible, treatment is directed toward removing the cause of Cushing's syndrome. If there is an overgrowth of adrenal tissue or an adrenal tumor, all or part of the adrenal gland may be surgically removed. This is called an adrenalectomy. If the syndrome is the result of excessive use of cortisone therapy, the dosage will be reduced whenever possible. However, if the pituitary gland is involved, a hypophysectomy (removal of the gland) or irradiation of the pituitary gland may be performed.

Pheochromocytoma

Pheochromocytoma is a usually benign tumor of the adrenal medulla. It affects people between the ages of 25 and 50 and is equally divided between males and females. Hypersecretion of epinephrine and norepinephrine is responsible for the symptoms associated with this disease.

Signs and Symptoms

1. Hypertension
2. Severe headache
3. Excessive sweating
4. Nausea and vomiting

LEARNING ACTIVITIES - continued

5. Palpitations

6. Nervousness with acute anxiety

7. During an acute attack, tachycardia, hyperglycemia and polyuria may occur.

Treatment

The treatment for a patient with pheochromocytomy is surgical removal of the tumor. If the entire adrenal gland has been excised, hydrocortisones must be administered after surgery. If a bilateral adrenalectomy is done, corticosteroid replacement is required for the rest of the person's life.

For the first two days after surgery the patient is in critical condition. The blood pressure may fall rapidly and shock can result. Pain medications that reduce the blood pressure (any narcotic) must be given very carefully.

ACTIVITY #7. Review Exercise

Directions: Answer these questions to review what you have just read. Fill in the blanks or circle "true" or "false."

1. The (anterior, posterior) pituitary secretes growth hormone or ______________ hormone that is responsible for the development and the enlargement of all bodily tissue.

2. If growth hormone is not secreted at birth, the person will be a ____________________.

3. If not enough growth hormone is secreted in adults, the person will develop a condition known as acromegaly. TRUE FALSE

4. Pituitary dwarfs are well-proportioned but remain childlike in all physical respects. TRUE FALSE

5. Hyperfunction of the anterior pituitary gland is responsible for which of the following conditions? (Circle those conditions)

   a. Diabetes insipidus

   b. Acromegaly

   c. Gigantism

   d. Cretinism

6. The following symptoms: enlarged hands, feet, forehead and jaws; thickened and enlarged lips; tongue large and protruding; and enlarged internal organs describe a condition resulting from hyperfunction of the pituitary gland known as ________________________.

LEARNING ACTIVITIES - continued

7. The posterior pituitary produces a hormone - ____________________ hormone that is responsible for regulating the reabsorption of water from the kidney tubules back into the bloodstream.

8. The average urinary output is from ________ to ________ cc per day.

9. The specific gravity of urine normally ranges between ________ to _______.

10. What does specific gravity measure? ______________________________

    ____

11. (Hyperfunction, Hypofunction) of the posterior pituitary results in a condition known as diabetes insipidus.

12. What is the major symptom of diabetes insipidus? ____________________

13. A patient with diabetes insipidus will have a specific gravity that shows the urine to be (more dilute, more concentrated) than normal urine.

14. The thyroid gland uses ________________ to produce its hormone ________________.

15. An infant dwarfed because of inadequate production of thyroid hormone in fetal life is known as a(n) ____________________.

16. Hypothyroidism in an adult is a condition known as ____________________ .

17. Name three thyroid tests that can help diagnose the condition in question #16.

    a. ____

    b. ____

    c. ____

LEARNING ACTIVITIES - continued

18. Remembering that the symptoms of myxedema are due to a depressed metabolic rate, list three symptoms of myxedema under patient problem. Then for each patient problem, give at least two nursing approaches that may help the patient.

Patient Problem	Nursing Approach	Rationale

19. Hyperthyroidism is also known as ____________ disease or ____________ or ____________.

20. Name three thyroid tests that may help to diagnose hyperthyroidism.

a. ____

b. ____

c. ____

LEARNING ACTIVITIES - continued

21. Remembering that the symptoms of hyperthyroidism are due to an overproduction of thyroxine resulting in an increased metabolic rate, list at least five symptoms of hyperthyroidism.

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

    e. ____________________

22. The word meaning "bulging eyes" is ____________________.

23. The surgical removal of part of the thyroid gland is a(n) ____________________ .

24. A patient with a thyroidectomy should be encouraged to move his head immediately postoperatively to prevent a stiff neck. TRUE FALSE

25. Define the word tetany. ____________________

26. Why is tetany a possible complication of a thyroidectomy? ____________________

    ____

27. You are assigned to a postoperative thyroidectomy patient. Give at least three observations you will make and chart as you care for this patient.

    a. ____________________

    b. ____________________

    c. ____________________

28. A ______________ goiter is the enlargement of the thyroid gland due to a lack of iodine in the diet. It is also known as an ______________ or ______________ goiter.

29. What is parathormone responsible for regulating? ____________________

    ____

30. In hyperparathyroidism, the parathyroid glands raise the blood level of calcium by taking it from the bones, which may cause the patient's bones to break with very little trauma. TRUE FALSE

LEARNING ACTIVITIES - continued

31. The adrenal cortex produces a group of hormones called corticoids. What are three classifications of corticoids?

    a. ______________________________

    b. ______________________________

    c. ______________________________

32. Which two hormones produced by the adrenal medulla are responsible for preparing us for emergency situations?

    a. ______________________________

    b. ______________________________

33. ________________ ________________ is a disease that results when the adrenal cortex atrophies and fails to secrete enough of its hormones.

34. When the adrenal cortex does not secrete enough glucocorticoid, the patient will have a low blood sugar and will complain of muscular weakness and of fatigue. TRUE FALSE

35. A patient with Addison's disease may go into Addison's crisis if he/she is overexposed to the sun. TRUE FALSE

36. You have an asthmatic patient who has been taking cortisone drugs for 20 years to help to control her asthma. Her physician says she may be developing a condition known as Cushing's syndrome. List at least five observable symptoms that helped her physician make that diagnosis.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

37. Surgical removal of the adrenal gland is called a/an: ________________

    Reasons for doing this would be: ______________________________

    ____

LEARNING ACTIVITIES - continued

ACTIVITY #8. Diabetes Mellitus

Directions: View the Trainex, "This is Diabetes," then read and complete the following information.

Diabetes means to siphon and mellitus means honey.

Diabetes mellitus is the fifth leading cause of death in the United States and a major cause of blindness in adults. It is the most common disturbance of carbohydrate metabolism and endocrine disorders. This disorder results from an abnormal metabolism of carbohydrates, fat and protein. Approximately two in every 100 Americans have been diagnosed with diabetes mellitus.

Diabetes mellitus is considered to be a hereditary disease since about one third of all diabetics give a history of the disease among their relatives. However, anyone can develop the disease. Other people also susceptible to diabetes include:

1. Obese persons. Approximately 85% of all diabetics are overweight or were overweight before they developed the disease.
2. Mothers who have delivered large babies (9 lbs or over).
3. Individuals with early onset of arteriosclerosis, men and women who have had myocardial infarctions before the age of 40.
4. Persons with chronic infections such as cholecystitis or nephritis.
5. Elderly persons.

Diagnostic Tests for Diabetes Mellitus

Random Blood Sugar (RBS): The RBS may be the first test the physician orders. A blood specimen is taken from the patient at any time and is tested for sugar content. Any RBS higher than normal may be the physician's first clue to the diagnosis of diabetes mellitus. The test may also be done at any time just to check a known diabetic's blood sugar level.

Fasting Blood Sugar (FBS): A FBS is a blood test done to determine the level of glucose in the blood of a patient who has not eaten recently. The patient is NPO for six to eight hours before the blood is drawn, usually after midnight. A normal fasting blood sugar level range is about 70-110 mg/100 ml of blood. Values above that level may indicate diabetes.

Two-Hour Postprandial Blood Sugar (2°PPS): Postprandial is a word meaning "after a meal." A 2°PP requires that blood be drawn two hours after the patient eats a meal. The patient must complete this meal, especially the carbohydrate foods. The patient is then NPO except for water until the blood is drawn. High blood sugar levels of 150 mg. two hours after eating may mean a diagnosis of diabetes.

LEARNING ACTIVITIES - continued

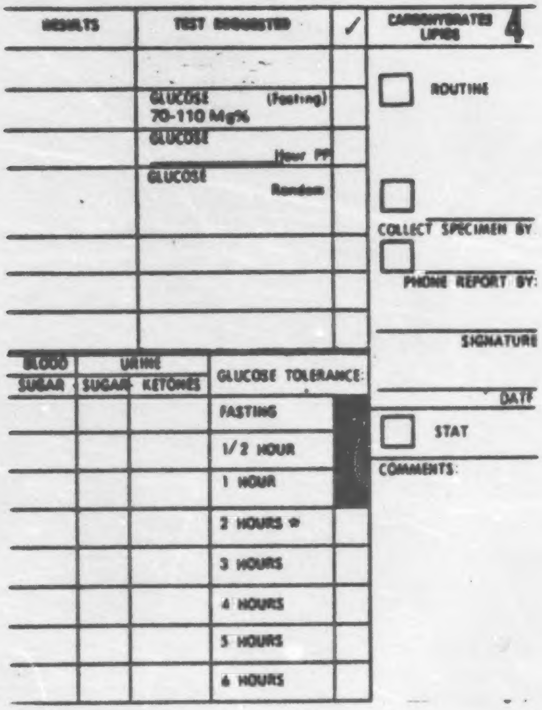
You will be responsible for reporting to your team leader or lab the minute the patient has finished the meal, so that your team leader or unit clerk can call the laboratory. The lab will draw the blood sample exactly two hours from the time the patient finished the meal. Do not wait until the two hours are over to notify the team leader, unit clerk or lab to come. You must also be sure the patient remains NPO for the two hours.

Glucose Tolerance Test (GTT): The glucose tolerance test is the most sensitive test for diabetes. The patient is NPO from midnight until after the test is completed. In the morning, a urine specimen is obtained and blood is drawn to give a fasting blood sugar level. The patient is then given a concentrated solution of glucose to drink and is then again NPO for food but should drink some water. At one-half, one, two and three-hour intervals, urine and blood specimens are obtained. The highest blood sugar level should not be more than 30 to 60 mg. above the fasting level and the blood sugar level should return to the fasting level in two hours. There should be no sugar in the urine. In diabetes, the blood sugar level is high two hours after drinking the glucose and does not return to the fasting level. The urine will usually be positive for sugar after two hours. The GTT may last for three, four, five or six hours depending on the physician's orders.

You will be responsible for making sure the patient remains NPO except for water until the test is completed. You are also responsible for collecting the urine specimens at the proper times. When the test is finished, all of the urine specimens must be sent to the laboratory for testing. Each specimen must be properly labeled with the patient's name, hospital number, time of collection, the physician's name, and number to show which specimen it is.

LEARNING ACTIVITIES - continued

This is an example of what a lab slip might look like. It contains an area for RBS, FBS, PP and GTT.



RESULTS	TEST REQUESTED	✓
	GLUCOSE (Fasting) 70-110 Mg%	
	GLUCOSE Hour PP	
	GLUCOSE Random	

CARBOHYDRATES LIPIDS 4

☐ ROUTINE

☐ COLLECT SPECIMEN BY

☐ PHONE REPORT BY:

SIGNATURE

DATE

☐ STAT

COMMENTS:

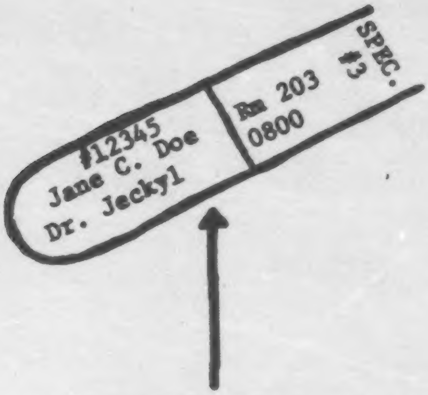
BLOOD	URINE		GLUCOSE TOLERANCE:	
SUGAR	SUGAR	KETONES		
			FASTING	
			1/2 HOUR	
			1 HOUR	
			2 HOURS *	
			3 HOURS	
			4 HOURS	
			5 HOURS	
			6 HOURS	

Please review Unit 8, Module H for nursing skills pertaining to clinitest and acetest. When the diabetic patient is in the hospital, the urine is usually tested every four to six hours if the patient is on a liquid diet, before meals and at bedtime or before administering insulin. The best procedure for testing urine is to have the patient void and discard the urine one-half hour before meals. One hour later a specimen should be collected for testing. This is known as fractional urine. In this way, only the urine being excreted by the kidneys will be tested. The sample will not contain urine that has been pooled in the bladder for several hours.

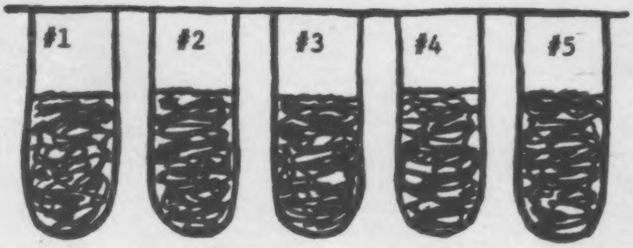
REMEMBER THE TWO THINGS THAT SHOULD BE DONE DURING A GLUCOSE TOLERANCE TEST.

1. THE LABORATORY WILL COLLECT BLOOD SPECIMENS HOURLY.

LEARNING ACTIVITIES - continued



(A properly labeled specimen)



2. YOU WILL COLLECT URINE SPECIMENS HOURLY, SAVE THE SPECIMENS, LABEL THEM PROPERLY AND SEND THEM TO THE LABORATORY WHEN THE TEST IS FINISHED!!!

Directions: If a doctor ordered a 5°GT and the patient first voided at 6:50 a.m., at what times would you collect urine specimens?

______

______

______

______

______

______

______

How many total urine specimens? ______

The Function of Insulin

To adequately understand the disease diabetes mellitus, you must thoroughly understand the function of insulin. Think of insulin as a cargo boat whose chief job is to carry glucose from the bloodstream to the body cells so that it can be burned for energy. Here is how it works.

You eat a meal. Your meal enters your stomach and is changed chemically into nutrients for body use. Some of these nutrients include proteins, fats and carbohydrates.

The carbohydrates are absorbed by the bloodstream in the form of glucose. When glucose is metabolized by the body cells, it is the nutrient that gives you the energy to work, to play, to care for your families and to do anything else you enjoy doing. However, unless glucose is transported from the bloodstream to the body cells, it cannot be burned for energy. Glucose that circulates throughout the body in the bloodstream and is not transported to the body cells will cause much damage to body tissue and leave you without energy.

The body normally keeps a specific amount of glucose in the bloodstream at all times (about 110mg./100 ml. blood). When the blood level of glucose goes up, the beta cells of the Isles of Langerhans in the pancreas are stimulated to secrete insulin. Insulin is the boat that picks up its cargo of glucose from the bloodstream and transports it to various body cells. Once in the cells, the glucose can be metabolized for energy. Without insulin to do this transporting, you cannot live.

Insulin Therapy

Insulin therapy is used to replace the deficiency of insulin secreted by the Isles of Langerhans' beta cells, to lower blood glucose levels and to enable the body to metabolize carbohydrates. Oral hypoglycemic agents may not be successful with some diabetic patients.

Insulin is extracted from both beef and pork pancreases obtained from animals going to slaughter. There are a number of insulin preparations available, each of which varies in onset of action, time of peak or maximum effect and duration or length of action. Insulin is a protein and cannot be administered orally since the hydrochloric acid in the stomach destroys it.

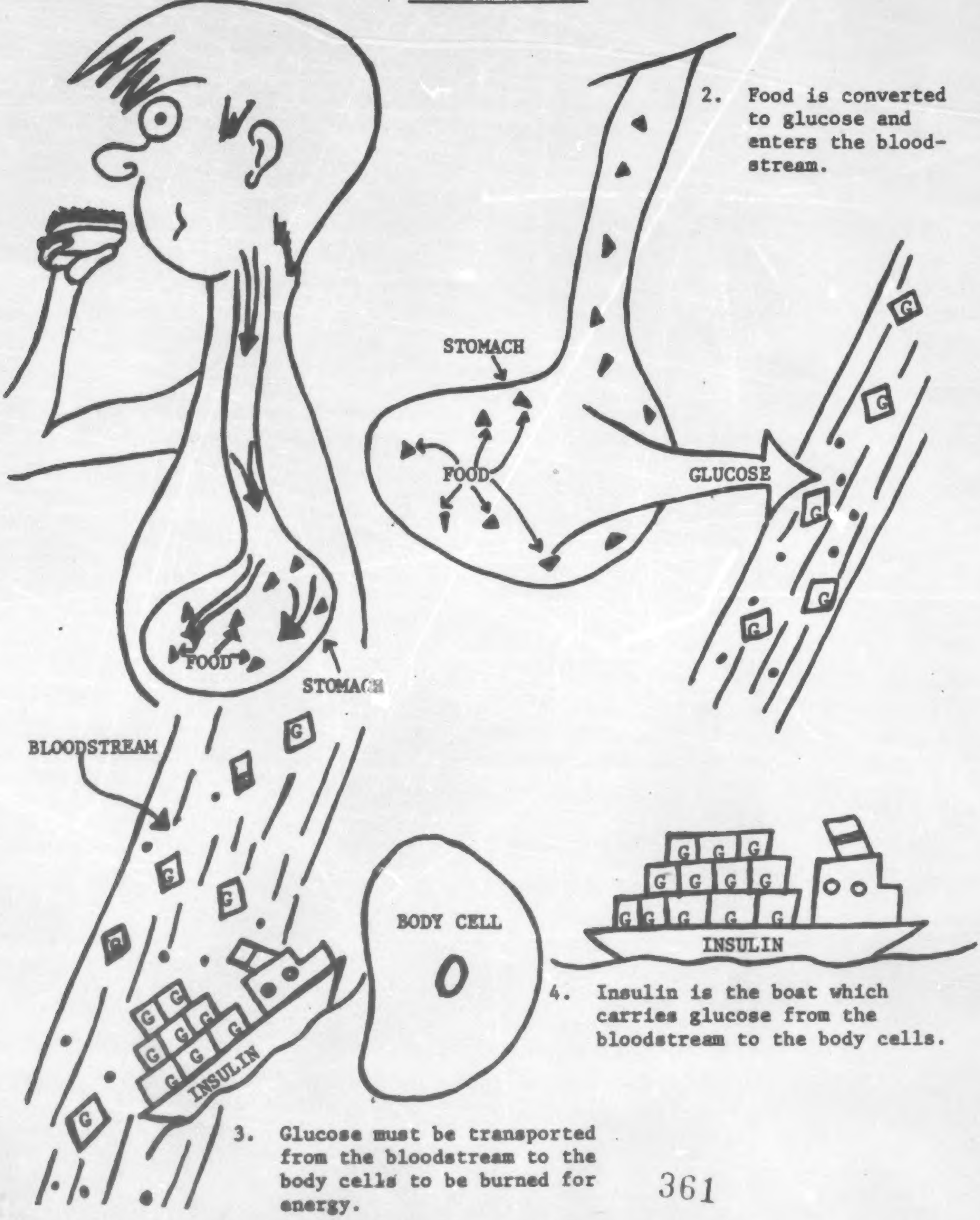
Oral Hypoglycemic Agents

Oral hypoglycemic agents may be effective for selected stable, noninsulin dependent diabetics who cannot be treated by diet alone or who otherwise require small doses of insulin or are unable or unwilling to take insulin. These noninsulin drugs may be useful for the aged, those with poor vision, crippling arthritis of the fingers and tremor of the hands and for those who for some reason refuse to take insulin.

For successful treatment with oral agents, the diet must be restricted in total calories and carbohydrates, and the patient's urine and blood glucose values monitored. Insulin is preferrable to oral hypoglycemic agents if dietary treatment fails to control diabetes. If, as time goes on, the patient's urine tests and blood glucose values are no longer responsive to oral hypoglycemic therapy, the patient is then treated with insulin. Insulin is usually given over oral hypoglycemic drugs if the patient develops an infection with fever, suffers trauma or undergoes major surgery.

LEARNING ACTIVITIES - continued

CARGO BOAT TRIP


FOOD
STOMACH
STOMACH
FOOD
GLUCOSE
G
BLOODSTREAM
BODY CELL
INSULIN
INSULIN

1. Food we eat enters the stomach.
2. Food is converted to glucose and enters the bloodstream.
3. Glucose must be transported from the bloodstream to the body cells to be burned for energy.
4. Insulin is the boat which carries glucose from the bloodstream to the body cells.

LEARNING ACTIVITIES - continued

Directions: Answer the following questions about diabetes by filling in the blanks or circling the correct answer.

1. Only people with a family history of diabetes will develop diabetes.
TRUE FALSE

2. People who are overweight are more susceptible to diabetes than people of average weight. TRUE FALSE

3. If blood is drawn at anytime during the day to determine the amount of sugar in the blood, the test is known as a(n) ____________ ____________ ____________.

4. The physician ordered, "NPO $\bar{p}$ 2400 for a FBS in a.m. and 2°PPS $\bar{p}$ lunch." What did he/she order? ____

____

5. How long must a patient be NPO for a FBS? ____________________

6. A normal fasting blood glucose level is (60, 110, 120) mg/100 ml. of blood.

7. If the patient is to have a 2°PPS done, what must you do to be sure the test is done correctly? ____

____

8. The most sensitive test for diabetes is the GTT, which stands for ____________________.

9. How many urine specimens must you collect if the patient is to have a three-hour GTT? ____

____

10. After the patient has drunk the concentrated glucose solution, you should encourage him to drink water so that he can void for the urine specimens.
TRUE FALSE

11. The lab draws blood from the patient at the same time that you collect the urine specimens. What do they test the urine for?

____

12. How long after drinking the concentrated glucose should it take for the blood to return to its normal fasting level?

____

LEARNING ACTIVITIES - continued

13. Five things you will include when labeling each urine specimen collected during a GTT are:

    a. ____________________ d. ____________________

    b. ____________________ e. ____________________

    c. ____________________

14. When carbohydrate foods are digested, they enter the bloodstream as ______________.

15. Name three foods that are sources of carbohydrates.

    a. ____________________

    b. ____________________

    c. ____________________

16. When glucose is metabolized, it provides the body with energy. Where does metabolism take place?

    ____

17. The ____________ of ____________ in the pancreas produces a hormone called ____________ that transports the glucose out of the bloodstream and into the body cells.

18. The type of cells in the above specialized tissue are (alpha, beta).

19. What stimulates the pancreas to produce insulin? ____________________

    ____

20. The diabetic's urine should be tested (1 hour a.c., 1/2 hour a.c., 1 hour p.c., or 1/2 hour p.c.) and at bedtime.

21. When is testape used to test urine instead of clinitest tablets?

    ____

22. List three uses of insulin.

    a. ____

    b. ____

    c. ____

LEARNING ACTIVITIES - continued

23. Insulin is readily digested in the stomach. TRUE FALSE

24. List five situations requiring the use of oral hypoglycemic agents.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

25. Insulin is preferrable to oral hypoglycemic drugs if dietary treatment fails to control diabetes. TRUE FALSE

26. After major surgery, patients regularly on oral hypoglycemic agents are given insulin instead. TRUE FALSE

Now go back and check your answers. If you have any problems or questions, ask your instructor to assist you. Then, continue reading this material.

What Causes Diabetes Mellitus?

Although diabetes mellitus is one of the oldest diseases known to man and was described over 3,000 years ago by the ancient Egyptians, we still do not know its exact cause. Remember, when glucose is in the bloodstream, the beta cells in the Isles of Langerhans of the pancreas are stimulated to secrete insulin directly into the bloodstream. The insulin then helps the glucose to move out of the bloodstream and into the cells where it is converted into energy. The diabetic, however, does not have the available insulin possibly due to one of three factors:

1. An insufficient number of Isles of Langerhans cells in the pancreas. (A person is usually born with this deficiency.)

2. The pancreas does not respond to the stimulation of glucose in the bloodstream. (The insulin is available but is not released or its release is delayed.)

3. Unknown substances in the body may inactivate the insulin that is produced.

Diabetes mellitus, then, is a disorder in which the body is unable to use available glucose because it is not moved from the blood into the body cells. This results in hyperglycemia.

Classifications of Diabetes

Patients who develop diabetes may be classified according to the time of the onset of the disease. There are two general types:

1. Juvenile diabetes: Those who develop diabetes at some time between birth and adolescence. They are also known as insulin-dependent diabetes.

LEARNING ACTIVITIES - continued

2. Adult diabetes or latent diabetes: Those who develop diabetes as adults. They are also known as noninsulin dependent.

Juvenile diabetics are usually children born with an insufficient number of Isles of Langerhans cells in the pancreas. In most instances, the onset of this type of diabetes is very sudden. Juvenile diabetics are very difficult to control and they fluctuate rapidly between high blood sugar and low blood sugar. For this reason, they are often referred to as "brittle diabetics." It is very difficult to restrict a child's activity or diet and a child's energy needs change daily. Usually these children are treated with daily insulin injections for the rest of their lives. Insulin may never be taken orally since it is a protein. If taken orally, it will be destroyed just as any other protein we eat by the hydrochloric acid and it will never reach the bloodstream in the form that is necessary to transport glucose out of the bloodstream.

Adult or latent diabetes is most common in women who are over 40 years of age and are overweight. Latent diabetes is very slow to develop and the symptoms are usually mild. In adult diabetes, the pancreas is worn out and no longer responds to the stimulation of glucose in the bloodstream. These patients may be controlled with a carefully regulated diabetic diet or may be treated with medication given orally that stimulates the pancreas to secrete more of its own insulin. These drugs are called oral hypoglycemic agents. If necessary, these patients may also be controlled with daily insulin injections and carefully regulated dietary intake.

Hyperglycemia

HYPER	GLYC	EMIA
V	V	V
TOO MUCH	GLUCOSE	IN THE BLOOD

Remember, the patient with diabetes mellitus has a deficiency of insulin and consequently, the body is unable to properly convert glucose into the energy needed for normal activity. If insulin is not available to help to transport glucose out of the bloodstream, the first thing that will happen to the body is an increase of glucose in the blood or HYPERGLYCEMIA. Some other symptoms of hyperglycemia include:

1. Glycosuria: Clinitest testape, diastix, dextrostix will be positive. Excess glucose in the blood is filtered out through the kidneys as part of the urine.

2. Polyuria: To prevent the glucose from crystallizing and causing kidney damage, large amounts of water are also excreted. The water keeps the glucose dissolved. Urine will be very pale in color.

3. Skin is hot, dry and flushed, If the patient is loosing a large amount of water through urine, the patient is going to become dehydrated.

4. Polydipsia: Excessive thirst. A dehydrated patient is very thirsty. This results as excretion of glucose by the kidneys increases, thus producing a corresponding increase in the amount of water excreted.

LEARNING ACTIVITIES - continued

5. Polyphagia: An excessive hunger and ingestion of food with weight loss resulting from tissue breakdown and a state of starvation caused by the inability of the body cells to utilize glucose for energy.

6. Constipation.

7. Signs of electrolyte imbalance.

Since the diabetic patient is not burning glucose for energy, the patient will start to burn the next best thing - FATS. When fats are burned very rapidly by the body to try to meet the body's demands for energy, they are incompletely metabolized. A by-product of incomplete fat metabolism is ketoacids that accumulate in the bloodstream. These ketoacids are toxic and alter the normal pH of the blood causing a condition known as ketoacidosis, also called diabetic acidosis. It may develop over several weeks or in just a few hours if the patient's diabetes is not controlled. Infection and omission of insulin are the most common causes. It can also be triggered by emotional stress and by such physical strains as pregnancy, changes in diet, allergies and other illnesses, and in young diabetics, a growth spurt. Some of the symptoms of diabetic acidosis include:

1. Polydipsia - (thirst) is the first manifestation of worsening insulin deficiency. Treat by giving insulin.

2. Polyuria - three to six liters a day. This causes an abnormal excretion of electrolytes; muscle weakness, extreme fatigue and malaise, anxiety, confusion, lethargy and cardiac arrhythmias and arrest.

3. Ketoacids in urine - acetest will be positive. The body tries to filter these poisonous ketoacids out through the kidneys as part of the urine. The urine will have a sweet smell to it.

4. Ketoacids excreted by the lungs. The patient will have symptoms of air hunger with Kussmaul's breathing, which is deep, fast respiration that is not labored, (like a fish out of water), with a sweet and fruity odor to the breath.

5. Coma and eventually death.

Treatment

The immediate objectives in the management of ketoacidosis are:

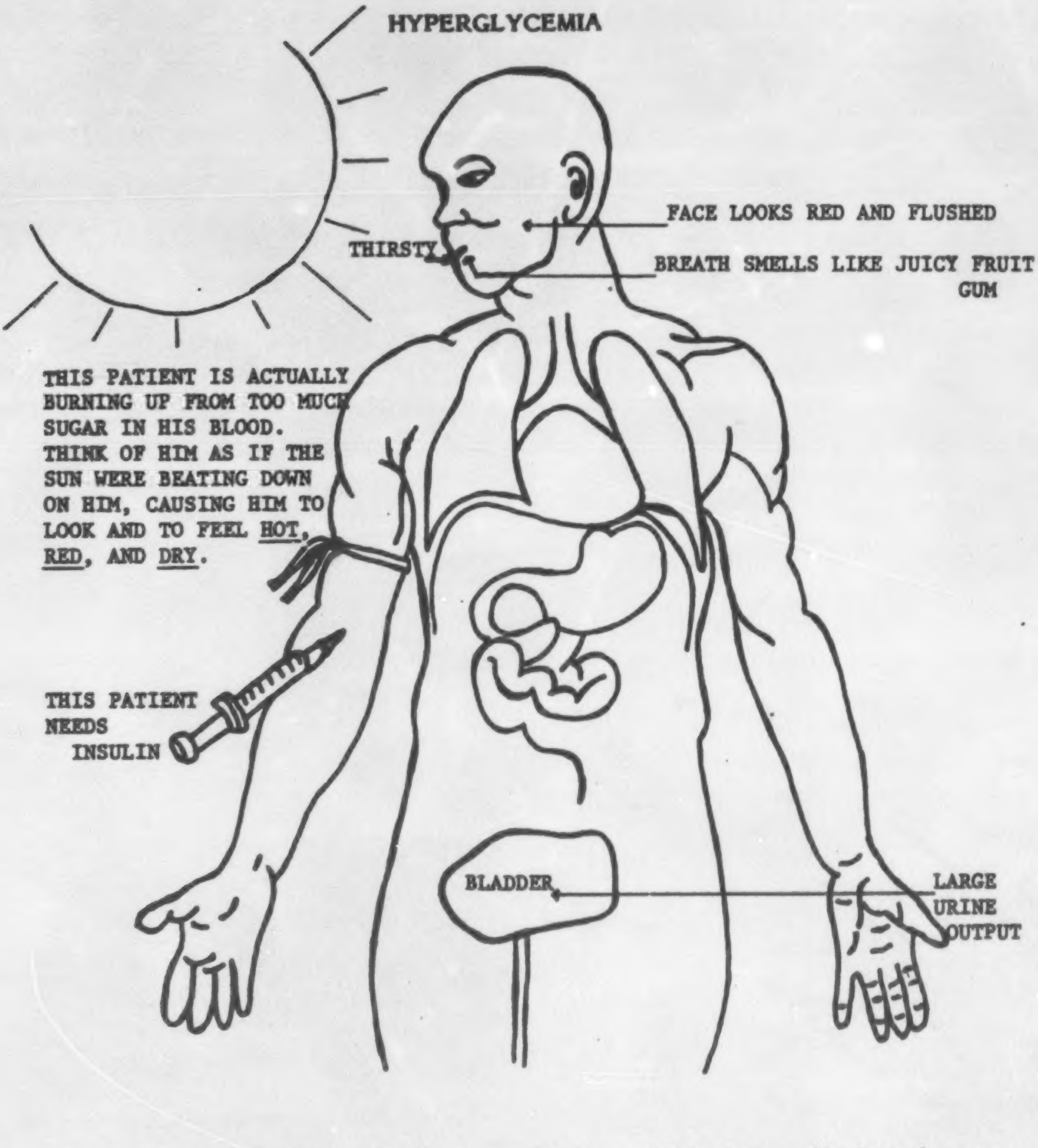
1. To restore normal carbohydrate, protein and fat metabolism.

2. To reverse hypovolemia.

3. To correct electrolyte imbalance.

LEARNING ACTIVITIES - continued

HYPERGLYCEMIA


FACE LOOKS RED AND FLUSHED
THIRSTY
BREATH SMELLS LIKE JUICY FRUIT GUM
BLADDER
LARGE URINE OUTPUT

THIS PATIENT IS ACTUALLY BURNING UP FROM TOO MUCH SUGAR IN HIS BLOOD. THINK OF HIM AS IF THE SUN WERE BEATING DOWN ON HIM, CAUSING HIM TO LOOK AND TO FEEL HOT, RED, AND DRY.

THIS PATIENT NEEDS INSULIN

The diabetic patient who has these symptoms could go into acidosis and coma (unconsciousness) unless insulin is administered immediately!!! Report these symptoms to your team leader before you do anything else.

LEARNING ACTIVITIES - continued

Hypoglycemia

HYPO	GLYC	EMIA
V	V	V
TOO LITTLE	GLUCOSE	IN THE BLOOD

Because the diabetic patient has injected insulin or has taken an oral hypoglycemic agent, the drugs are in the diabetic's system for the day. The patient must always eat the right foods at the right time or there will be no glucose in the bloodstream for the already present insulin to transport. Hypoglycemia occurs when the blood glucose falls below 50-60 mg/100 ml of blood. It can be caused by too much insulin, too little food, including vomiting after a meal, excessive physical activity or exposure to extreme cold. Most episodes occur before meals, but they may occur at any time of day or night.

The symptoms of hypoglycemia are exactly the opposite of the symptoms of hyperglycemia and may be mild or severe and occur quickly. When the blood glucose falls rapidly, the most common symptoms are:

1. Oliguria
2. Sweating
3. A trembling sensation
4. Irritability and dizziness
5. Tachycardia
6. Palpitation
7. Nervousness
8. Hunger

When the blood glucose falls slowly, there is depression of the central nervous system, resulting in:

1. Headache
2. Light-headedness
3. Confusion
4. Emotional changes
5. Memory lapses
6. Numbness of the lips and tongue
7. Slurred speech

LEARNING ACTIVITIES - continued

8. Incoordination, staggering gait
9. Double vision (diplopia)
10. Drowsiness
11. Convulsions and, eventually, coma

The patient who is hypoglycemic needs glucose, some form of carbohydrate. A quick source is orange juice with sugar mixed in it. A specimen of blood should be taken before sugar is given.

Note that both of these complications (hyperglycemia and hypoglycemia) may progress to unconsciousness or coma. This is one reason why careful observation and a thorough knowledge of the symptoms of each are very important. The treatment for each of these conditions is contraindicated for the other. A patient in a coma cannot tell you what may have brought on these symptoms. It is hoped that your observations will lead to treatment before coma develops.

Physician

Nurse

Pharmacist

YOU

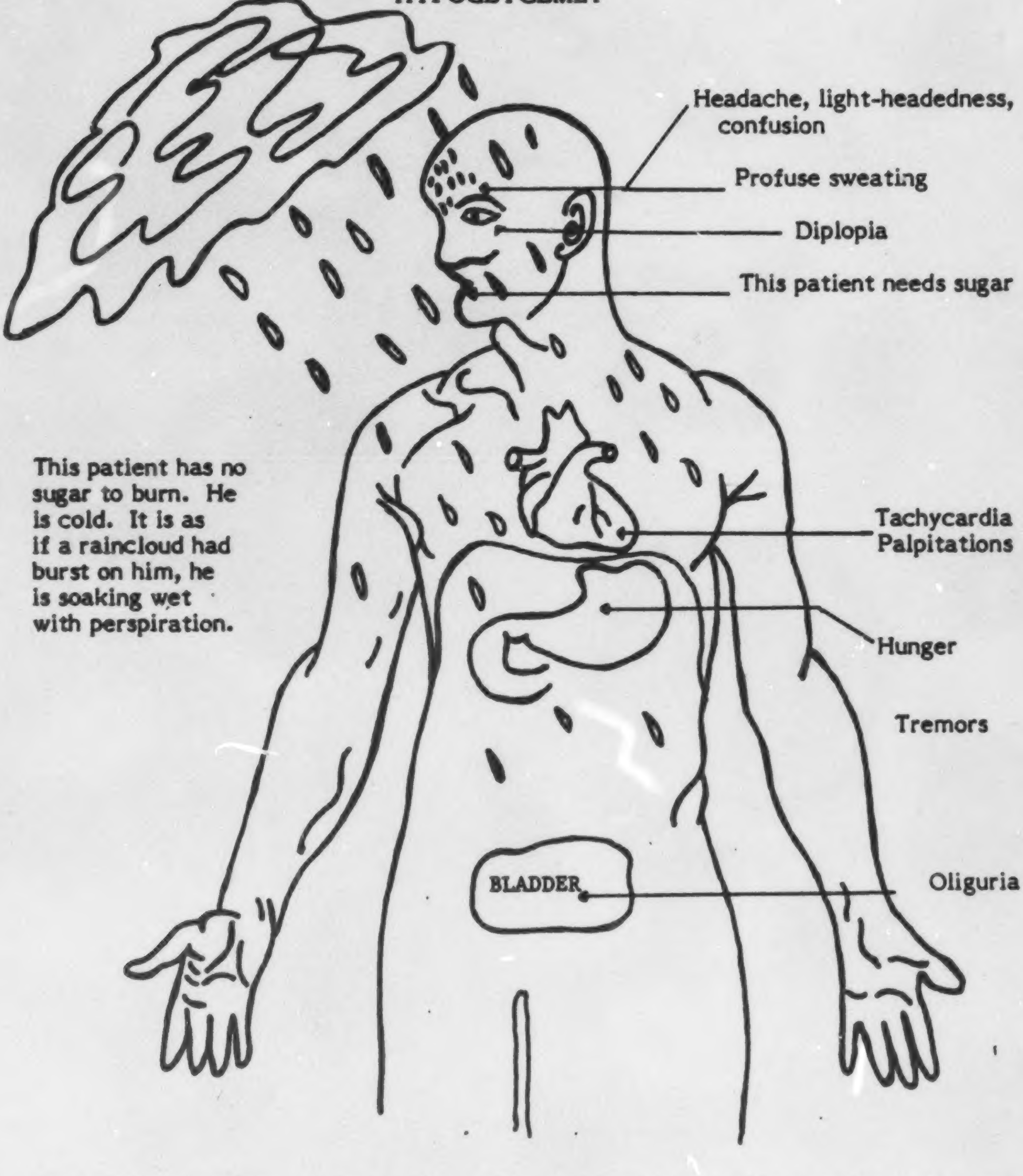
Dietitian

Social Worker

Physical Therapist

LEARNING ACTIVITIES - continued

HYPOGLYCEMIA


Headache, light-headedness, confusion
Profuse sweating
Diplopia
This patient needs sugar
Tachycardia
Palpitations
Hunger
Tremors
BLADDER
Oliguria

This patient has no sugar to burn. He is cold. It is as if a raincloud had burst on him, he is soaking wet with perspiration.

The diabetic patient who has these symptoms could go into insulin shock and unconsciousness unless he gets sugar immediately. Report these symptoms to your team leader before you do anything else.

LEARNING ACTIVITIES - continued

Treatment of Diabetes Mellitus

Diabetes is not curable but it is controllable. Once a person is diagnosed as having diabetes, he/she can lead a normal, full and productive life. The care of the diabetic patient must be concerned first with immediate nursing needs and second with long range needs, since diabetes is a lifetime disease. However, the diabetic must learn to use the "tools of treatment" available in order to lead this normal life. These tools include:

1. See physician regularly. The diabetic must have close medical supervision at all times. Blood glucose levels and urine testing should be done periodically.

2. Strict diet regulation and weight control. Weight must be reduced and maintained. The right foods must be eaten at the right times in the right amounts. The diet is ordered by the physician and is calculated for the individual patient. The dietician plays an important function in this area of care for a diabetic. Failure to eat properly must be reported.

   The most important objective in dietary treatment of diabetic patients is control of total calorie intake to attain or maintain ideal weight and to promote optimal body growth. The first step in preparing the meal plan is to determine the patient's basic calorie requirements, taking into consideraton age, sex, body weight, degree of activity and ethnic and cultural background. The meals should be measured and spaced at regular intervals. Emphasis is placed on what the patient is allowed rather than on what is forbidden. The diet consists mostly of low-carbohydrate and low-fat foods with high protein. Food exchange lists prepared by the American Diabetic Association (ADA) are used in planning the patient's therapeutic diet. They are:

   a. Milk

   b. Vegetables

   c. Fruits

   d. Breads

   e. Meats

   f. Fats

   g. Free foods

   Each food on a specific list is interchangeable with another and is equal in nutritional value, permitting likes and dislikes. A specified number of exchanges is allowed for each meal and at bedtime, according to the caloric intake prescribed by the physician. (See food exchange lists on pages 44 to 52.)

3. Balanced physical activity. All physical activity such as walking, working, playing and breathing use up energy. Since the diabetic's medications are balanced with just the right amount of energy for a certain amount of physical activity, this activity must be the same all of the time. It should be a regular pattern of moderate daily exercise with adequate sleep and rest. Extra food is required for extra activity, and this is not deducted from the regular diet.

4. Medication. The diabetic will be given a specific amount and kind of medication to maintain balance with diet and activity. It must be taken regularly and on time in the right amount.

LEARNING ACTIVITIES - continued

5. Self-maintenance. The diabetic who does not take care of himself/herself will develop several complications. Some of these complications include:

    a. Arteriosclerosis or hardening of the arteries. The patient may experience abnormal or unusual coldness of feet and hands; may develop heart trouble (myocardial infarction), kidney diseases, strokes, fainting or sudden lapses of consciousness. This causes approximately 70% of deaths among diabetic persons.

    b. Neuritis or irritation of the peripheral nerves. The diabetic may have feelings of numbness, tingling, pain or muscle weakness especially in the lower legs and feet that can lead to infection, gangrene and amputation.

    c. Eye changes such as cataracts and irritation of the eyes. Retinopathy, a noninflammatory condition resulting in small vessel hemorrhaging in the eyes, will eventually occur in approximately 70% of all diabetic patients. This will eventually hinder self-care, testing urine, injecting insulin and preparing food. It is now the leading cause of blindness in adults under 60, especially non-white female diabetic patients. All diabetics should be examined by an opthalmologist annually.

    d. Infection. All infected tissues and wounds are very slow to heal. Gangrene is a common complication in the diabetic and often requires an amputation of the limb, especially of the toes, feet or lower legs.

6. Foot care. The feet of the diabetic patient are subject to sepsis and ischemia from deficient nerve function and poor circulation. Diabetes can cause pain and paresthesia, but the greatest problem is loss of pain, temperature and sensation. Without pain perception, repeated trauma to the feet is tolerated until calluses and ulcers form and the joints become damaged. External heat is the most common single cause of gangrene. In the presence of gangrene, amputation is done at the lowest level that has an adequate blood supply and is free of infection.

7. Patient education. The success of any diabetic treatment program depends entirely on the patient's willingness to accept a plan of care. It is started at the time of diagnosis and must be continued throughout life. A responsible member of the patient's family should be included in the educational program. The patient must understand.

    a. Pathophysiology of diabetes

    b. Basic concepts of dietary management

    c. Urine testing

    d. Medication, especially administration of insulin

    e. Recall of signs and symptoms of hypoglycemia and hyperglycemia

    f. Basic principles of foot care

LEARNING ACTIVITIES - continued

Nursing Care

The special care for the diabetic patient will include the following:

1. Be sure your patient eats all the food in the diet but does not "sneak" any extra foods. Assist the patient with diet. Call upon the dietician as necessary. Study the exchange lists found on pages 44 to 52.
2. Always observe for and report immediately any signs of hyperglycemia or hypoglycemia.
3. Always report immediately the results of urine sugar and acetone to your team leader.
4. Check for and report any coldness of feet, numbness or tingling in the extremities or muscle weakness.
5. Observe for and report any chest pain or dizziness.
6. Observe for and report any new signs of problems with vision.
7. Always give good skin care. Even the most superficial wounds should be watched carefully. Watch for signs of decubitus ulcers. Since circulation is usually poor in the legs and feet, be especially careful to give good care to the feet.
8. Check the circulation of the lower extremities and feet.
9. Never cut toenails, corns or calluses without a doctor's order because serious infection may develop. A podiatrist should be consulted.
10. Never place hot water bottles or heating pads near the feet.
11. Never bandage the feet tightly because that further hinders circulation.
12. Do patient teaching.

LEARNING ACTIVITIES - continued

Exchange Lists

Directions: Study the following pages and then prepare menus to be discussed in your class.

LIST	**Milk Exchanges** (Includes **Non-Fat** Low-Fat and Whole Milk)	One exchange of milk contains 12 grams of carbohydrate, 8 grams of protein, a trace of fat and 80 calories.

This list shows the kinds and amounts of milk or milk products to use for one milk exchange. Those appearing in **bold type** are **non-fat**. Low-fat and whole milk contain saturated fat.

Non-Fat Fortified Milk

Skim or non-fat milk	1 cup
Powdered (non-fat dry, before adding liquid)	1/3 cup
Canned, evaporated - skim milk	1/2 cup
Buttermilk made from skim milk	1 cup
Yogurt made from skim milk (plain, unflavored)	1 cup

Low-Fat Fortified Milk

1% fat fortified milk (omit 1/2 fat exchange)	1 cup
2% fat fortified milk (omit 1 fat exchange)	1 cup
Yogurt made from 2% fortified milk (plain, unflavored) (omit 1 fat exchange)	1 cup

Whole Milk (Omit 2 fat exchanges)

Whole milk	1 cup
Canned, evaporated whole milk	1/2 cup
Buttermilk made from whole milk	1 cup
Yogurt made from whole milk (plain, unflavored)	1 cup

LIST **Vegetable Exchanges**

One exchange of vegetables contains about 5 grams of carbohydrate, 2 grams of protein and 25 calories.

This list shows the kinds of **vegetables** to use for one vegetable exchange. One exchange is 1/2 cup.

Asparagus
Bean Sprouts
Beets
Broccoli
Brussels Sprouts
Cabbage
Carrots
Cauliflower
Celery
Cucumbers
Eggplant
Green Pepper
Greens:
  Beet
  Chards
  Collards
  Dandelion
  Kale
Greens:
  Mustard
  Spinach
  Turnip
Mushrooms
Okra
Onions
Rhubarb
Rutabaga
Sauerkraut
String Beans, green or yellow
Summer Squash
Tomatoes
Tomato Juice
Turnips
Vegetable Juice Cocktail
Zucchini

The following **raw vegetables** may be used as desired:

Chicory
Chinese Cabbage
Endive
Escarole
Lettuce
Parsley
Radishes
Watercress

Starchy vegetables are found in the bread exchange list.

LIST **Fruit Exchanges**

One exchange of fruit contains 10 grams of carbohydrate and 40 calories.

This list shows the kinds and amounts of **fruits** to use for one fruit exchange.

Apple	1 small	**Mango**	1/2 small
Apple Juice	1/3 cup	**Melon**	
Applesauce (unsweetened)	1/2 cup	**Cantaloupe**	1/4 small
Apricots, fresh	2 medium	**Honeydew**	1/8 medium
Apricots, dried	4 halves	**Watermelon**	1 cup
Banana	1/2 small	**Nectarine**	1 small
Berries		**Orange**	1 small
Blackberries	1/2 cup	**Orange Juice**	1/2 cup
Blueberries	1/2 cup	**Papaya**	3/4 cup
Raspberries	1/2 cup	**Peach**	1 medium
Strawberries	3/4 cup	**Pear**	1 small
Cherries	10 large	**Persimmon, native**	1 medium
Cider	1/3 cup	**Pineapple**	1/2 cup
Dates	2	**Pineapple Juice**	1/3 cup
Figs, fresh	1	**Plums**	2 medium
Figs, dried	1	**Prunes**	2 medium
Grapefruit	1/2	**Prune Juice**	1/4 cup
Grapefruit Juice	1/2 cup	**Raisins**	2 tablespoons
Grapes	12	**Tangerine**	1 medium
Grape Juice	1/4 cup		

Cranberries may be used as desired if no sugar is added.

LEARNING ACTIVITIES - continued

LIST	**Bread Exchanges (Includes Bread, Cereal and Starchy Vegetables)**	One exchange of bread contains 15 grams of carbohydrate, 2 grams of protein and 70 calories.

This list shows the kinds and amounts of **Breads, Cereals, Starchy Vegetables** and prepared foods to use for one bread exchange. Those appearing in **bold type** are **low-fat**.

Bread

White (includeing French and Italian)	1 slice
Whole Wheat	1 slice
Rye or Pumpernickel	1 slice
Raisin	1 slice
Bagel, small	1/2
English Muffin, small	1/2
Plain Roll, bread	1
Frankfurter Roll	1/2
Hamburger Bun	1/2
Dried Bread Crumbs	3 Tbs.
Tortilla, 6"	1

Cereal

Bran Flakes	1/2 cup
Other ready-to-eat unsweetened Cereal	3/4 cup
Puffed Cereal (unfrosted)	1 cup
Cereal (cooked)	1/2 cup
Grits (cooked)	1/2 cup
Rice or Barley (cooked)	1/2 cup
Pasta (cooked), Spaghetti, Noodles, Macaroni	1/2 cup
Popcorn (popped, no fat added)	3 cups
Cornmeal (dry)	2 Tbs.
Flour	2-1/2 Tbs.
Wheat Germ	1/4 cup

Starchy Vegetables

Corn	1/3 cup
Corn on Cob	1 small
Lima Beans	1/2 cup
Parsnips	2/3 cup
Peas, Green (canned or frozen)	1/2 cup
Potato, White	1 small
Potato (mashed)	1/2 cup
Pumpkin	3/4 cup
Winter Squash, Acorn or Butternut	1/2 cup
Yam or Sweet Potato	1/4 cup

Crackers

Arrowroot	3
Graham, 2-1/2" sq.	2
Matzoth, 4" x 6"	1/2
Oyster	20
Pretzels, 3-1/8" Long x 1/8" dia.	25
Rye Wafers, 2" x 3-1/2"	3
Saltines	6
Soda, 2-1/2" sq.	4

Dried Beans, Peas and Lentils

Beans, Peas, Lentils (dried and cooked)	1/2 cup
Baked Beans, no pork (canned)	1/4 cup

LEARNING ACTIVITIES - continued

LIST	**Bread Exchanges (Includes Bread, Cereal and Starchy Vegetables)** (continued)

Prepared Foods

Biscuit 2" dia. (omit 1 Fat Exchange)	1
Corn Bread, 2" x 2" x 1" (omit 1 Fat Exchange)	1
Corn Muffin, 2" dia. (omit 1 Fat Exchange)	1
Crackers, round butter type (omit 1 Fat Exchange)	5
Muffin, plain small (omit 1 Fat Exchange)	1
Potatoes, French Fried, length 2" to 3-1/2" (omit 1 Fat Exchange)	8
Potato or Corn Chips (omit 2 Fat Exchanges)	15
Pancake, 5" x 1/2" (omit 1 Fat Exchange)	1
Waffle, 5" x 1/2" (omit 1 Fat Exchange)	1

LEARNING ACTIVITIES - continued

LIST **Meat Exchanges**

This list shows the kinds and amounts of **Lean Meat** and other protein-rich foods to use for one low-fat meat exchange. One exchange of lean meat (1 oz.) contains 7 grams of protein, 3 grams of fat and 55 calories.

Lean Meat

Beef:	Baby Beef (very lean), Chipped Beef, Chuck, Flank Steak, Tenderloin, Plate Ribs, Plate Skirt Steak, Round (bottom, top), All cuts Rump, Spare Ribs, Tripe	1 oz.
Lamb:	Leg, Rib, Sirloin, Loin (roast and chops), Shank, Shoulder	1 oz.
Pork:	Leg (Whole Rump, Center Shank), Ham, Smoked (center slices)	1 oz.
Veal:	Leg, Loin, Rib, Shank, Shoulder, Cutlets	1 oz.
Poultry:	Meat without skin of Chicken, Turkey, Cornish Hen, Guinea Hen, Pheasant	1 oz.
Fish:	Any fresh or frozen	1 oz.
	Canned Salmon, Tuna, Mackerel, Crab and Lobster,	1/4 cup
	Clams, Oysters, Scallops, Shrimp,	5 or 1 oz.
	Sardines, drained	3
Cheeses containing less than 5% butterfat		1 oz.
Cottage Cheese, dry and 2% butterfat		1/4 cup
Dried Beans and Peas (omit 1 Bread Exchange)		1/2 cup

This list shows the kinds and amounts of **Medium-Fat Meat** and other protein-rich foods to use for one medium-fat meat exchange. For each exchange of medium-fat meat omit 1/2 fat exchange.

Medium-Fat Meat

Beef:	Ground (15% fat), Corned Beef (canned), Rib Eye, Round (ground commercial)	1 oz.
Pork:	Loin (all cuts Tenderloin), Shoulder Arm (picnic), Shoulder Blade, Boston Butt, Canadian Bacon, Boiled Ham	1 oz.
Liver, Heart, Kidney and Sweetbreads (these are high in cholesterol)		1 oz.
Cottage Cheese, creamed		1/4 cup
Cheese: Mozzarella, Ricotta, Farmer's cheese, Neufchatel, Pamesan		3 tbs.
Egg (high in cholesterol)		1
Peanut Butter (Omit 2 additional Fat Exchanges)		2 tbs.

LIST **Meat Exchanges** (continued)

This list shows the kinds and amounts of **High-Fat Meat** and other protein-rich foods to use for one high-fat meat exchange. For each exchange of high-fat meat omit 1 fat exchange.

High-Fat Meat

Beef:	Brisket, Corned Beef (Brisket), Ground Beef (more than 20% fat), Hamburger (commercial), Chuck (ground commercial), Roasts (Rib), Steaks (Club and Rib)	1 oz.
Lamb:	Breast	1 oz.
Pork:	Spare Ribs, Loin (Back Ribs), Pork (ground), Country style Ham, Deviled Ham	1 oz.
Veal:	Breast	1 oz.
Poultry:	Capon, Duck (domestic), Goose	1 oz.
Cheese:	Cheddar Types	1 oz.
Cold Cuts		4-1/2" x 1/8" slice
Frankfurter		1 small

LEARNING ACTIVITIES - continued

LIST **Fat Exchanges**

One exchange of fat contains 5 grams of fat and 45 calories.

This list shows the kinds and amounts of fat-containing foods to use for one fat exchange. To plan a diet low in saturated fat select only those exchanges that appear in **bold type. They are polyunsaturated.**

Margarine, soft, tub or stick*	1 teaspoon
Avocado (4" in diameter)**	1/8
Oil, Corn, Cottonseed, Safflower, Soy, Sunflower	1 teaspoon
Oil, Olive**	1 teaspoon
Oil, Peanut**	1 teaspoon
Olives**	5 small
Almonds**	10 whole
Pecans**	2 large whole
Peanuts**	
Spanish	20 whole
Virginia	10 whole
Walnuts	6 small
Nuts, other**	6 small
Margarine, regular stick	1 teaspoon
Butter	1 teaspoon
Bacon fat	1 teaspoon
Bacon, crisp	1 strip
Cream, light	2 tablespoons
Cream, sour	2 tablespoons
Cream, heavy	1 tablespoon
French dressing***	1 tablespoon
Italian dressing***	1 tablespoon
Lard	1 teaspoon
Mayonnaise***	1 teaspoon
Salad dressing, mayonnaise type***	2 teaspoons
Salt pork	3/4 inch cube

* Made with corn, cottonseed, safflower, soy or sunflower oil only

** Fat content is primarily monounsaturated

*** If made with corn, cottonseed, safflower, soy or sunflower oil, can be used in fat-modified diet.

LEARNING ACTIVITIES - continued

Putting the Exchange Lists to Work in Planning Your Meals

Remember this old nursery rhyme?

Jack Sprat could eat no fat
His wife could eat no lean
And so betwixt the two of them
They licked the platter clean

LIST

Yes Yes Yes

Diet calorie-free beverage
Coffee
Tea
Bouillon without Fat
Unsweetened Gelatin
Unsweetened Pickles

No No No

Sugar
Candy
Honey
Jam
Jelly
Cookies

Syrup
Condensed Milk
Chewing Gum
Soft Drinks
Pies
Cakes

If you like to add seasonings to your food, don't forget there are many you can use freely. Some of the seasonings you may want to consider include:

More Yes Yes Yes

Salt and Pepper
Red Pepper
Paprika
Garlic
Celery Salt
Parsley
Nutmeg
Lemon

Mustard
Chili Powder
Onion Salt or Powder
Horseradish
Vinegar
Mint
Cinnamon
Lime

LEARNING ACTIVITIES - continued

Directions: After you have studied the pages outlining the American Diabetic Association (ADA) diabetic exchange diets and reviewed Unit 5, Module D, from your core material, prepare the following menus. Discuss your menus with your instructor and other students.

1. 1,000 calories. Prepare breakfast only.

1/2 milk	1 fruit	1 bread	1 meat
________	________	________	________

2. 1,500 calories. Prepare lunch only.

1 milk	1 fruit	2 bread	2 meat	1-1/2 fat
________	________	________	________	________

3. 2,400 calories. Prepare dinner only.

1/2 milk	1 veg.	1-1/2 fruit	4 bread	4 meat	3 fat
________	________	________	________	________	________

ACTIVITY #9. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false." This exercise will help you to review what you have just read.

1. Diabetes develops because the insulin cannot react with the glucose in the bloodstream. TRUE FALSE

2. If diabetes develops in childhood, the diabetic is referred to as a ________________________ diabetic.

3. Adult diabetes is also known as ________________________ diabetes because it develops late in life.

4. When a child develops diabetes, the onset is usually very sudden, but when the adult develops diabetes, the onset is very slow. TRUE FALSE

5. What is one of the possible causes of diabetes in children.

____

6. Because diabetes is very difficult to control in children, they are often referred to as being ________________________ diabetics.

7. Juvenile diabetics are usually treated with ________________, which must be taken for the rest of their lives.

LEARNING ACTIVITIES - continued

8. Why must this treatment be taken only by injection?

____

9. Adult diabetics may be treated with drugs that stimulate the Isles of Langerhans to secrete insulin. These drugs are called oral ____________________.

10. Hypoglycemic agents are also known as "oral insulin." TRUE FALSE

11. Define hyperglycemia: ____________________

____

12. Circle all the symptoms listed below that are known to indicate hyperglycemia.

    a. skin hot and dry
    b. skin cold
    c. polydipsia
    d. skin clammy
    e. breath that smells like Juicy Fruit gum
    f. diaphoresis
    g. polyuria
    h. Kussmaul breathing
    i. scant urine output
    j. glucosuria
    k. excited and nervous
    l. lethargic
    m. polyphagia
    n. constipation
    o. diarrhea
    p. electrolyte imbalance
    q. positive acetest
    r. tachycardia
    s. diplopia

13. The byproduct of incomplete fat metabolism is ____________ acids that can cause a condition known as ________________ when allowed to accumulate in the bloodstream.

14. Diabetic acidosis may develop into ____________ ____________.

15. List three reasons why a diabetic may become hyperglycemic.

    a. ____
    b. ____
    c. ____

16. Define hypoglycemia: ____________________

____

LEARNING ACTIVITIES - continued

17. Circle all the symptoms listed below that are known to indicate hypoglycemia.

   a. skin hot and dry
   b. skin cold
   c. polydipsia
   d. skin clammy
   e. breath that smells like Juicy Fruit gum
   f. diaphoresis
   g. polyuria
   h. Kussmaul breathing
   i. scant urine output
   j. glucosuria
   k. excited and nervous
   l. lethargic
   m. polyphagia
   n. constipation
   o. diarrhea
   p. electrolyte imbalance
   q. positive acetest
   r. tachycardia
   s. diplopia

18. Hypoglycemia may develop into ______________ ______________ and coma.

19. What does the hypoglycemic need to return to normal? ______________

____

20. List four reasons why a diabetic may become hypoglycemic.

   a. ____
   b. ____
   c. ____
   d. ____

21. What are the seven types of treatment that will help the diabetic to lead a normal life and to avoid complications?

   a. ______________________
   b. ______________________
   c. ______________________
   d. ______________________
   e. ______________________
   f. ______________________
   g. ______________________

22. A complication of diabetes is blindness. TRUE FALSE

23. Because the diabetic is prone to developing ______________, you must be careful to observe for and report any complaints of cold feet.

24. In the diabetic patient, an infection that starts with an improperly clipped toenail may result in amputation of the limb. TRUE FALSE

25. What does ADA stand for? ______________________________

LEARNING ACTIVITIES - continued

26. List the seven exchange lists prepared by the ADA.

a. ____________________ e. ____________________

b. ____________________ f. ____________________

c. ____________________ g. ____________________

d. ____________________

27. What is the significance of the food exchange list?

____

____

28. Make a general nursing care plan for a diabetic patient. Discuss your care plan with the instructor.

Patient Problem	Nursing Approach	Rationale
Acceptance of having diabetes mellitus,		
Understanding diabetes mellitus.		

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Dietary management		
Urine testing		
Medication		
Self-maintenance		

LEARNING ACTIVITIES - continued

ACTIVITY #10. Clinical Assignment

Directions: Read the following objectives that are specific to the care of a patient with endocrine conditions. You are responsible for these, as well as the general clinical objectives, when assigned to such a patient.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:
   - a. Emotional stress
   - b. Abnormal growth and development
2. Explain the function and nursing care related to the following three categories of drugs used in the treatment of endocrine conditions.
   - a. Hormones
     - (1) Pituitary
     - (2) Thyroid
     - (3) Tissue-building hormones
     - (4) Pancreas (insulin or hypoglycemic agents) .
     - (5) Suprarenal
     - (6) Ovarian
     - (7) Testicular
   - b. Vitamins
     - (1) Fat soluble
     - (2) Water soluble
   - c. Minerals
     - (1) Non-nutrient
     - (2) Nutrient

LEARNING ACTIVITIES - concluded

3. Demonstrate the nursing procedure for diagnostic tests done for your assigned patients and determine if the test results were within normal range. Include:
   a. Thyroid studies
      (1) Radioactive iodine uptake
      (2) PBI (Protein Bound Iodine)
      (3) BMR
   b. Pancreas
      (1) Blood sugar
      (2) 2-hour PPBS
      (3) Glucose tolerance
      (4) 24-hour urinalysis
      (5) Clinitest and acetest
4. Demonstrate nursing care of patients with therapy specifically related to endocrine system (metabolic disorders). Include:
   a. Clinitest, acetest, testape and ketodiastix
   b. Insulin (determine if needed, determine dosage and administer)
   c. Determine if foods given to patient are acceptable within prescribed diets.
   d. Notify dietitian if diabetic patient fails to eat.
5. Demonstrate teaching patient and family:
   a. Regarding relationship of diet, exercise and medication for diabetics.
   b. How to perform, read and record clinitest and acetest, testape and ketodiastix.
   c. How to prepare and administer medication.

NURSING CARE OF ADULTS

Module G - Nursing Care for Patients with Diseases of the Reproductive System

RATIONALE

To give safe, effective nursing care to a patient with a disease of the reproductive system, you must know the physiological and anatomical changes that occur and the signs and symptoms that must be observed.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity 15 when given a clinical assignment of caring for a patient with a disorder of the reproductive system.
2. Identify the normal anatomy and physiology and the anatomical and physiological changes that occur with diseases affecting the reproductive system of both the male and the female patient.
3. Identify diseases related to the reproductive system.
4. Identify the most appropriate nursing action used when giving care to a patient with a disease of the reproductive system in given situation questions.
5. Identify causes, common signs, symptoms, and treatments for diseases related to the reproductive system.
6. Identify laboratory and diagnostic procedures used to diagnose diseases of the reproductive system.
7. Identify vocabulary terms given in matching exercises.
8. Verbally describe or name the nursing action, patient symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the reproductive system.

LEARNING ACTIVITIES

Directions: The information you need to complete Module G is included in this module and in the reading assignment from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the reproductive system and review Unit 4, Module I. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material found in this module and Unit 4. There are many diseases common to the reproductive system; however, the diseases discussed in this module are most

LEARNING ACTIVITIES - continued

commonly found in the hospitalized patients. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

ACTIVITY #1. Introduction to the Male Reproductive System

Directions: Read and study Chapter 18, "Nursing the Patient with Problems of the Reproductive System." Review the first part of Module I in Unit 4 on the male reproductive system, then answer the questions below by filling in the blanks or by circling "true" or "false" and by labeling the diagram.

1. The male reproductive gland is called ______________________________ .

2. This gland secretes the male sex hormone ______________, which is responsible for the male secondary sex characteristics.

3. List three secondary sex characteristics of a male.

   a. ____

   b. ____

   c. ____

4. The gland from question #1 is also responsible for the production of the male sex cell, the ___________, which unites with the female sex cell to produce a new human.

5. The testes lie outside of the body in a pouch of loose skin called the ______________________________.

6. The ______________ ________________ is a gland behind the bladder that secretes the gelatinous fluid part of the semen.

7. When semen is ejected from the male urethra during intercourse, the action is known as ________________.

8. The gland that surrounds the first inch of the urethra below the neck of the bladder is the __________________ gland.

9. The prostate gland secretes an acid substance that is responsible for killing bacteria in the vagina during intercourse. TRUE FALSE

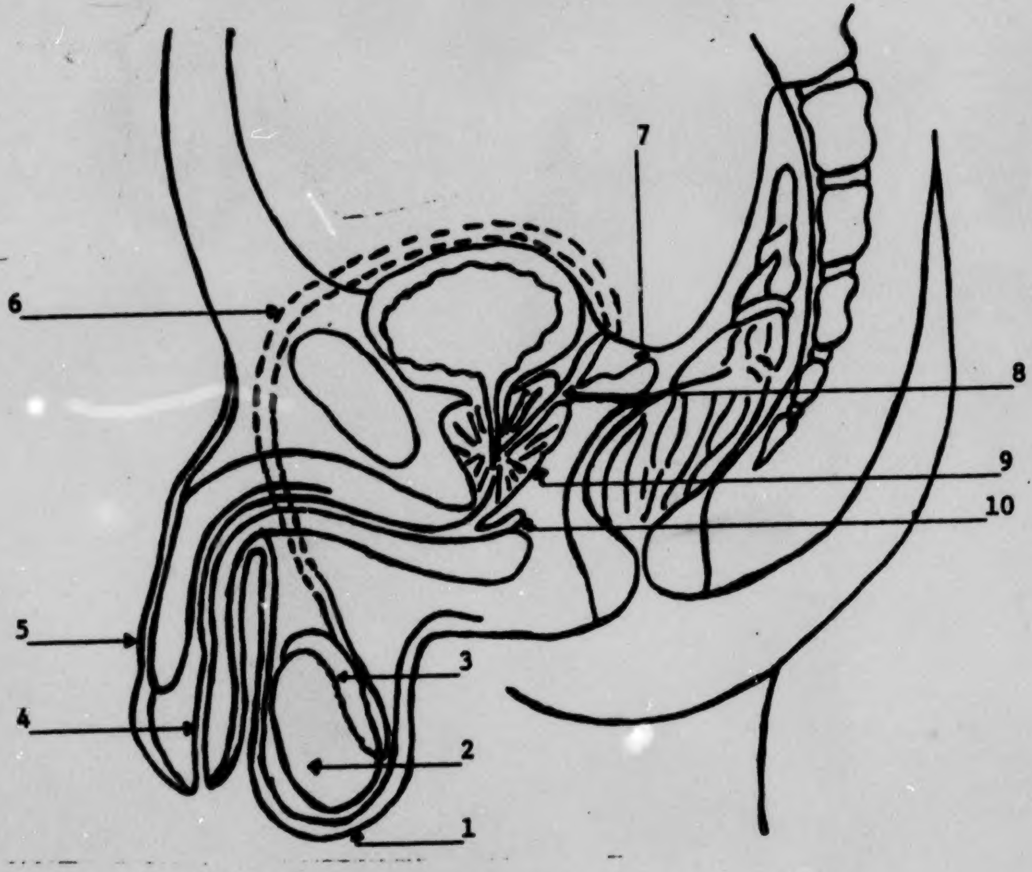
10. Which duct in the male reproductive system is responsible for transporting both urine and semen to the outside of the body? ______________________

11. The loose-fitting skin that covers the tip of the penis is called the ______________.

12. This skin is usually removed by a surgical procedure called __________________.

LEARNING ACTIVITIES - continued

13. Label the parts of the male reproductive system on the lines provided at the bottom of the page.



1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
7. ______________________
8. ______________________
9. ______________________
10. ______________________

LEARNING ACTIVITIES - continued

ACTIVITY #2. Conditions Affecting the Testes and the Adjacent Ducts

Directions: Read the following information.

Cryptorchidism

Cryptorchidism is more commonly known as undescended testicle and the absence of one or both testes from the scrotum. During fetal life, the testes develop first in the abdominal cavity and then in the inguinal canal. Usually they descend about two months before birth. You may have noticed the physician, during an examination of the newborn, feeling the scrotum. The physician is checking to see if both testes have descended. Only about 3 percent of all male babies have cryptorchidsm at birth and it is even more uncommon in adult males, since the testes, if undescended at birth, will usually descend within the first few weeks of life. In order to reproduce, the male must have at least one testis in its normal position in the scrotum. The testes normally lie in the scrotal sac outside of the body because body heat can kill the sperm. If a testis remains in the abdominal cavity or inguinal canal, it functions normally to produce sperm and to secrete testosterone; however, the sperm that it produces are killed by the body heat. Also, although cancer of the testes is very rare, it is more common in undescended testes. Cryptorchidism is first treated with hormone therapy and, if that is unsuccessful, with surgery to secure proper positioning.

Orchitis

Another word meaning testicle is "orchis," so orchitis is an inflammation of the testicle. The inflammation may be due to trauma or may be secondary to an infection elsewhere in the body. Mumps occurring after puberty is one of the main causes of orchitis. The inflammation may be so severe that it causes atrophy of the testes and sterility.

Signs and Symptoms

1. Swollen, painful testicle; the swelling can be so intense that it may cut off the blood supply to the testicle and the testis will become gangrenous.
2. High temperature
3. Nausea and vomiting

Physician's Orders and Nursing Care

1. Antibiotic therapy to treat the infection that caused the orchitis.
2. Bedrest
3. Support and elevate the scrotum.
4. Intermittent application of ice packs to relieve pain and to prevent swelling.
5. Analgesics for pain.

LEARNING ACTIVITIES - continued

Epididymitis

Inflammation and infection of the epididymis is another very common testicular disease. The epididymis is the single coiled duct lying along the top and on the side of each testicle. Although it is about twenty feet long, it is barely visible to the human eye. Epididymitis may be a complication of gonorrhea but usually results secondarily from an infection involving the prostate gland or the urinary tract.

Signs and Symptoms

1. Swelling and pain in the scrotum and the groin.
2. The scrotum may be red and warm to the touch.
3. High temperature and chills.
4. Urinary frequency, urgency, dysuria, voiding in small amounts and cloudy urine with a very foul odor (if the urinary tract is also infected).

Nursing Care

Nursing care is symptomatic. Study the care plan below.

Patient Problem	Nursing Approach	Rationale
Painful swelling of the scrotum.	Bedrest.	To prevent tension on the spermatic cord (the cord that suspends the testes in the scrotum).
	Elevate and support scrotum on rolled towel with a commercial scrotal supporter.	To prevent tension on the spermatic cord. To relieve pain by lessening the weight of the testes.
	Ice packs placed under the scrotum, not on top or leaning against it; should not be continuous; schedule for one hour on and one-half hour off or as ordered by the physician.	Encourage drainage to reduce swelling. To relieve pain. To help prevent swelling; continuous cold may damage tissue.
	Local heat or sitz baths later on during the infection.	To relieve pain and reduce swelling.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Concurrent urinary tract infection	Force fluids.	To dilute bacteria and to flush out bladder.
	Measure intake and output.	To make sure no retention is present and the urinary system is functioning adequately.
	Sitz baths.	To relieve dysuria. To relax bladder and urethra.

Hydrocele

A hydrocele is the accumulation of fluid in the membraneous sac that surrounds the testes and the spermatic cord. This condition may develop following trauma or may be secondary to orchitis or epididymitis. It may also occur spontaneously even without a history of injury or an infection. Unless associated with orchitis or epididymitis, the collection of fluid is usually painless even if the scrotum becomes as large as a grapefruit. However, the large scrotal mass is very inconvenient. The physician may choose to aspirate the fluid with a needle; however, the fluid usually accumulates again, requiring additional aspirations. Surgical treatment, a hydrocelectomy, involves the removal of the membraneous sac surrounding the testes or the suturing of the sac to the spermatic cord with removal of the excessive portions. Postoperatively, the patient may have a drain and require frequent dressing changes. The scrotum should be elevated and supported and the patient should wear a commercial supporter when ambulating.

Vasectomy

A vasectomy is the surgical ligation and removal of a section of the vas deferens. The operation may be performed to prevent recurring attacks of epididymitis or, if performed bilaterally, as a sterilization procedure. The vas deferens is a very tiny duct about the size of a piece of thread so a vasectomy is very seldom reversible and is considered permanent. The procedure has no effect on sexual potency, erection, ejaculation or hormone production. The testes will continue to produce testosterone and sperm, but because the sperm cannot be transported to the outside of the body, the patient will be sterile. Remember, the seminal vesicles produce the major portion of the semen so the patient should not notice any decrease in the amount of ejaculated fluid.

ACTIVITY #3. Conditions Affecting the Prostate Gland

Directions: Read this material.

Benign Prostatic Hypertrophy (BPH)

Benign prostatic hypertrophy is the gradual enlargement of the prostate gland that occurs in about one-third of all men over 50 years of age. The exact cause is unknown but the hypertrophy is associated either with a benign (nonmalignant) tumor

LEARNING ACTIVITIES - continued

that develops within the gland or with hyperplasia (an overgrowth of cells). The condition is diagnosed by a rectal examination, since pressure of the prostate gland against the rectum is easily felt, or by a cystoscopic examination. The physician may also order a catheterization for residual urine.

Signs and Symptoms

The prostate gland surrounds the first inch of the urethra right below the neck of the bladder so many of the symptoms are associated with urinary difficulties. Symptoms include:

1. Difficulty initiating urination or perpetuating the stream. This results in urinary retention.
2. Urinary frequency and nocturia. The patient cannot entirely empty the bladder and as residual urine accumulates the bladder fills more quickly.
3. Hematuria
4. Since residual urine is a good media for bacteria growth, cystitis may develop.
5. Hydronephrosis may develop because urinary flow is obstructed.
6. Eventually, complete inability to void.

Since the symptoms appear gradually and are not usually painful, they may easily be ignored. The condition, however, is progressive and ultimately will require surgery.

Prostatic Surgery

A prostatectomy or removal of all or part of the prostate gland may be accomplished by doing one of four different procedures. They are usually done by a urologist, whose specialty is the urinary tract.

1. Retropubic prostatectomy. The prostate is removed through an incision made in the lower part of the abdomen. The bladder is moved to expose the prostate without actually entering the prostate.
2. Perineal prostatectomy. With the patient in lithotomy position, an incision is made through the perineum behind the scrotum.
3. Suprapubic prostatectomy. An incision is made in the pubic region above the bladder. The bladder is entered and the prostate removed through the bladder. An advantage of this procedure is that the physician may also examine the bladder and remove any abnormalities that exist. The patient will usually return from surgery with both a suprapubic catheter in the bladder and a urethral Foley catheter that is connected to continuous bladder irrigation (CBI). The suprapubic wound may dribble urine and should be kept clean and dry to avoid infection. Frequent sterile dressing changes may be necessary. Review Unit 8, Moduel G-2 for CBI.

LEARNING ACTIVITIES - continued

4. Transurethral resection of the prostate or transurethral prostatectomy (TURP). Since there is no external incision, a TURP is the easiest of the four procedures and is usually the operation of choice in most poor-risk patients. An instrument, called a resectoscope, is inserted through the urethra into the bladder. As the urologist looks through the scope, pieces of the obstructing prostatic tissue will be removed with an electric wire. Postoperatively, the patient will have a urethral catheter either to straight drainage or connected to continuous irrigation to reduce clot formation. Since prostatic tissue is vascular, some hematuria is expected. It begins to clear from a reddish-pink to a light pink within 24 hours after surgery. Frank bleeding is much more likely to occur within the first day following surgery. The catheter most frequently used is of large diameter and may be 3-way to allow for application of CBI. It is usually a 24 french Foley with a 30 cc balloon.

Nursing care of the patient following a TURP will include:

Patient Problem	Nursing Approach	Rationale
Prostatic bleeding	Observe the color of drainage in the tubing. Urine in the Foley bag may be old.	Obvious bleeding with many clots may indicate hemorrhage.
	Bedrest for the first 24 to 48 hours postop. Prolonged sitting increases intra-abdominal pressure and fosters bleeding.	To prevent postop bleeding.
	Feel abdomen for over distended bladder and inspect catheter tubing frequently for patency and clots that may obstruct drainage; may hand irrigate to remove clots.	Overdistended bladder may cause bleeding. Clots cause bleeding. Irrigation agitates the clots so they can be removed.
	Prevent constipation. Encourage bulk vegetables and fluids. Stool softeners and mild laxatives PRN may be ordered by the physician.	Straining may induce bleeding.
	Observe for drop in blood pressure and elevated pulse; cool, pale skin and restlessness.	Hypovolemic shock is a possible complication. Bright red drainage with numerous clots and viscosity usually means arterial bleeding. Arterial hemorrhage necessitates a return trip to the O.R. for cauterization. Venous bleeding is darker and less viscous and can be controlled without surgery.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Bladder spasms	Inspect drainage and catheter tubing frequently.	Overdistended bladder from clots obstructing the tube may cause spasms.
	Give antispasmodics if ordered. Give frequent meatal care.	Spasms may cause some urinary leakage around the catheter.
	Watch that air does not go into the bladder with CBI or hand irrigation.	Causes bladder spasms.
Possible urethritis from irritation of the catheter.	Meatal care or cath care on every shift with phisohex and cortisporin or with neomycin ointment or betadine ointment as ordered by the physician.	To help reduce irriation, to prevent infection and to promote healing.
	Temperature q 4 hrs.	Elevated temperature may indicate infection.
	Tape catheter to inner thigh or lateral abdomen.	To prevent irritation from tension on the catheter or penoscrotal fistula.
Possible thrombophlebitis in the leg veins.	Encourage leg movement immediately postop; range of motion while on bedrest; may use pedals.	Movement of leg muscles helps milk the veins so blood returns to the heart more effectively.
	TED hose.	Continuous, even pressure will help to prevent pooling of blood in legs.
	Avoid high Fowler's position and pressure under the knees.	Pressure of veins in the groin and under the knees will diminish the return flow of blood.

LEARNING ACTIVITIES - continued

Special Care for Patient with TURP

Cath Care: Some bleeding is normal, wash daily with soap and water, clean catheter with alcohol, apply antibiotic ointment to meatus.

Irrigation procedure:

1. Use 100-150 cc fill bladder - aspirate 50 cc. Always leave a bolus of fluid in the bladder.
2. Through and through irrigation: Through penile catheter and out suprapubic catheter then through S.P. out penile. Ensures patency of both catheters.

After the TURP catheter is discontinued the following may occur:

Patient Problem	Nursing Approach	Rationale
Incontinence	Record time and amount of each voiding.	Bladder irritation causes frequent urge to void. This will clear up with time.
Small amount of urine and bloody urine	Recath after notifying the doctor.	Clots are forming and preventing complete emptying.
Dribbling that does not get better with time.	Notify doctor.	Retention or sphincter damage.
	Collect urine in test tubes with date and time (this is called rocking urines).	This indicates to the doctor the amount of bleeding.

Prostatitis

Prostatitis is the inflammation and the swelling of the prostate gland and is usually secondary to a systemic infection or local gonorrheal infection. The patient may complain of low abdominal or perineal pain, urinary frequency with retention, dysuria, fever, nausea and vomiting. Treatment consists of antibiotic therapy and sitz baths. A retention catheter may be required if prostatic swelling causes urinary obstruction.

ACTIVITY #4. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. When one or more testes is missing from the scrotum at birth, the condition is known as ____________________ or undescended testis.
2. The patient with just one testicle remaining in the abdominal cavity or inguinal canal will be sterile because body heat kills sperm. TRUE FALSE

LEARNING ACTIVITIES - continued

3. If both testes are undescended, the man will never develop secondary sex characteristics because the testes will not fuction normally to produce testosterone. TRUE FALSE

4. If "______________" is another word meaning testicle, what is an orchiectomy?

____

5. Inflammation of the testicle is called ______________________ .

6. This inflammation of the testes is usually secondary to infection elsewhere in the body. What infection, normally a childhood disease, is one of the main causes of the inflammation if it occurs after puberty? ______________________

7. What are the major dangers if this inflammation is severe?

   a. ____
   b. ____
   c. ____

8. Inflammation and infection of the coiled duct lying on top of and to the side of each testis is called ______________________.

9. List four common symptoms of the infection in question #8.

   a. ____
   b. ____
   c. ____
   d. ____

10. You have a patient with a very painful, swollen scrotum. List three things that you can do to help to relieve the pain or reduce or prevent the swelling.

    a. ____
    b. ____
    c. ____

11. When fluid collects in the sac that surrounds the testes and the spermatic cord, it is a condition known as a(n) ______________________.

12. The surgical removal of this sac in question #11 is a(n) ______________________ .

13. The accumulation of the fluid in the sac may cause the scrotum to swell painlessly until it is very large. TRUE FALSE

LEARNING ACTIVITIES - continued

14. A sterilization procedure that involves ligating and removing a section of the vas deferens is a(n) ______________________.

15. Since epididymitis is usually the result of an infection starting in the urinary tract or prostate and then moving up to the vas deferens to the epididymis, a vasectomy may also be performed to prevent recurring epididymitis.
TRUE FALSE

16. Following a vasectomy, although the patient will be sexually potent and able to have an erection and orgasm, he will not ejaculate any seminal fluid except the small amount of fluid produced by the prostate.
TRUE FALSE

17. BPH is an abbreviation that stands for __________ __________ __________.

18. What does hypertrophy mean? ______________________________

19. If a tumor is nonmalignant, it is ______________________________ .

20. If you have a patient admitted with possible BPH, you may expect the physician to order two diagnostic examinations. What are they?

a. ______________________________

b. ______________________________

21. Where is the prostate gland located? ______________________________

22. Because of the location of the prostate gland, you would expect the patient with BPH or prostatitis to have certain symptoms. List four symptoms you would observe for.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

23. If the physician chooses to remove the prostate gland through an incision made in the pubic region above the bladder, what type of prostatectomy will be performed? ______________________________

____

24. TURP stands for __________ __________ __________.

LEARNING ACTIVITIES - continued

25. After the patient has had a prostatectomy, he will be returned to his room with a catheter draining urine. You must inspect the catheter frequently for patency and clots to be sure it is draining freely. Give at least two reasons why an overdistended bladder must be avoided.

    a. ______________________________

    b. ______________________________

26. Cancer of the prostate is one of the most common cancers in men.
    TRUE FALSE

ACTIVITY #5. Introduction to the Female Reproductive System

Directions: Review the last part of Module I, "Anatomy and Physiology of the Reproductive System" in Unit 4, and then answer the following questions by circling the correct answer in parentheses, circling "true" or "false" or filling in the blanks and labeling the diagram.

1. The female external organs of reproduction are collectively referred to as the (labia, vagina, vulva).

2. A mucous membrane, the ____________, separates the external from the internal organs of reproduction in the female.

3. The female sex gland is called the ______________________.

4. This gland is responsible for producing the egg or _______, the female sex cell.

5. Each ovary is made up of many sacs called ___________ follicles that contain the eggs.

6. While the egg within the follicle is maturing, the follicle will secrete a hormone, (estrogen, progesterone, FSH, LH), which is responsible for the female secondary sex characteristics.

7. List three female secondary sex characteristics.

    a. ______________________________

    b. ______________________________

    c. ______________________________

8. Follicle-stimulating hormone (FSH) produced by the anterior pituitary is responsible for stimulating the follicle to produce estrogen and for the maturation of the follicle. TRUE FALSE

9. Once the follicle has matured, the luteinizing hormone (LH) causes the follicle to rupture and to release the egg. The rupture of the follicle to release the egg is known as __________________.

LEARNING ACTIVITIES - continued

10. The release of the egg from the follicle occurs on which day in the 28-day menstrual cycle? ______________________

11. After the follicle has ruptured, the scar tissue known as the ______________ will produce estrogen and a second female hormone known as (FSH, progesterone, testosterone). This hormone prepares the uterus for pregnancy and is responsible for the maintenance of pregnancy once the fertilized egg is implanted in the uterus.

12. The average menstrual cycle lasts about five days. TRUE FALSE

13. The uterus has three major functions. List them.

    a. ______________________

    b. ______________________

    c. ______________________

14. The fallopian tubes are connected to the uterus on one end and to the ovaries on the other end. TRUE FALSE

15. ______________ is the union of the sperm and the egg.

16. This union usually takes place in the ______________________ .

17. After one month of development, the fertilized egg is known as a(n) (embryo, fetus).

18. From the third month of development until birth, the child in the uterus is called a(n) ______________.

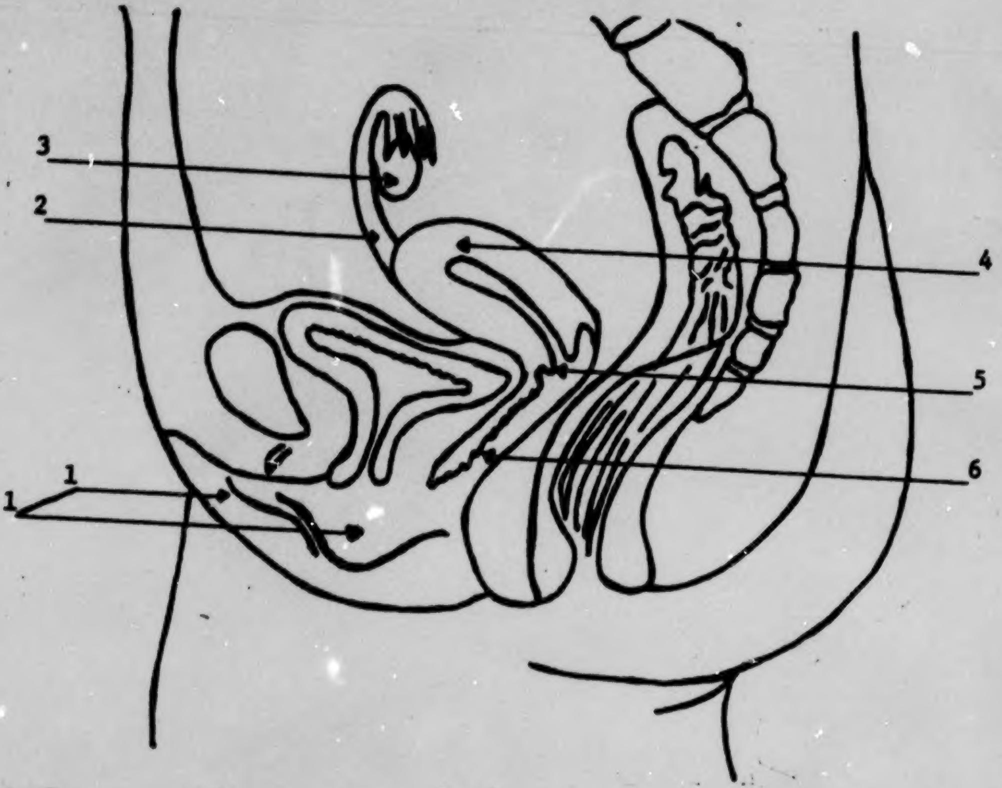
19. The ______________ is the lining of the uterus where a fertilized ova is implanted. This lining is sloughed off during the menstrual period if the ova does not implant.

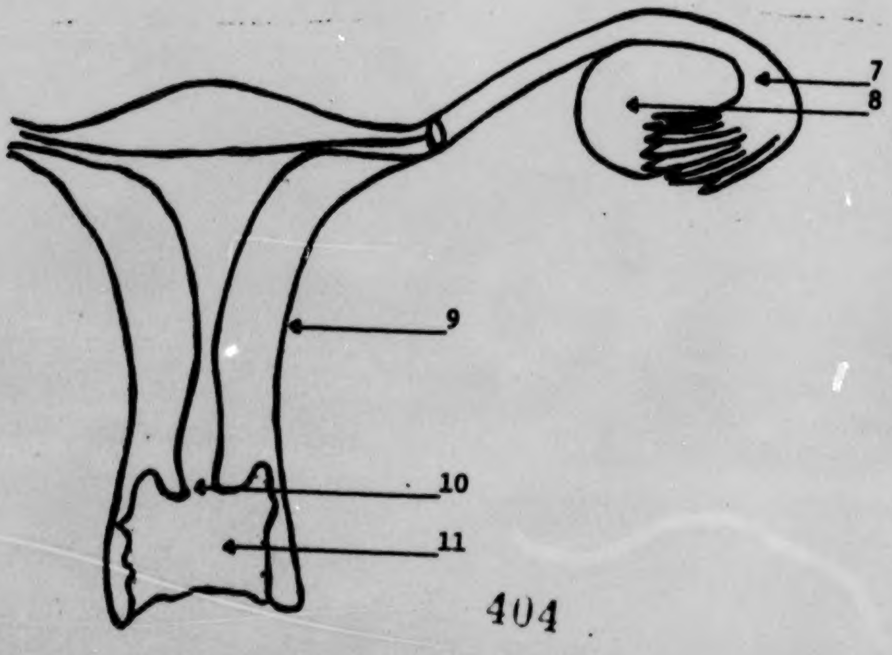
20. The secretion of milk by the breasts is known as (lacrimation, lactation).

Did you have trouble answering these questions? If you did, see your instructor before completing the diagram on the next page.

LEARNING ACTIVITIES - continued

21. Label the parts of the female reproductive system on the two diagrams.





LEARNING ACTIVITIES - continued

ACTIVITY #6. Laboratory and Diagnostic Tests

Directions: Read this information.

Pelvic Examination

A pelvic examination is a visual examination of the vulva, the vagina and the cervix. The purpose of the examination is to examine the vagina and the cervix for any unusual signs. The examination is done with an instrument known as a speculum. It is well lubricated and then inserted into the vagina where it is opened to give the physician a clear view. The physician may insert a finger into the vagina and palpate the abdomen to examine the uterus. After completion of the pelvic examination, the physician may do a digital rectal examination to feel the back surface of the uterus.

To prepare the patient, you must place her in lithotomy position and drape her using a three-corner drape; one corner of the sheet is wrapped around each foot and the third corner is draped between the legs to cover the perineum. If the physician wishes to examine the patient in bed, she may be placed in a dorsal recumbent position with her hips elevated on an overturned bedpan that has been draped with a bath blanket. It may be necessary to stay with the patient throughout the entire examination for legal reasons. The physician may need you to lubricate the speculum, to help with the PAP smear, to adjust the light or to hold the flashlight.

PAP Test

The PAP test, or Papanicolaou test, is usually done at the same time as the pelvic examination. It tests for cervical cancer. The physician will swab the vaginal secretions, scrape the cervix and smear these on two separate glass slides. You may be asked to label these slides, one vaginal and one cervical, and spray a fixation agent on the slides. The slides should be taken to the lab immediately. The smear of secretions is examined under the microscope to see if any cells are malignant. If the smear on one or both slides is positive, the physician may order a cervical biopsy. This test will be discussed later. It is important for every woman to have this test done on a regular basis, every six months to one year depending on her physician. Cervical cancer can be cured if diagnosed in its early stages and the easiest way of diagnosing this disease is with a PAP test. As a nurse, you can help by teaching women about the importance of a regular examination by a physician.

Women should be reminded not to douche 24 hours prior to their PAP test as a douche may wash away valuable cellular information and invalidate the results.

Schiller Iodine Test

The Schiller iodine test is another test often done at the same time as the pelvic examination and also used for early detection of cancer cells. The cervix is painted with iodine. The normal cells will stain brown and the immature or abnormal cells will not absorb the dye. A cervical biopsy may be performed at the sites where the stain is absent.

LEARNING ACTIVITIES - continued

Cervical Biopsy

When the Schiller iodine test shows a suspicious area or when the PAP smear is positive or questionable, the physician may wish to do a cervical biopsy to confirm a diagnosis of cancer. The procedure may be done in the physician's office during the pelvic examination and may be a little uncomfortable but should not be painful. A piece of cervical tissue is taken with biopsy forceps, placed in a bottle of special fluid (usually formaline) and sent immediately to the lab. The patient is instructed to rest for the next day or two and may expect some vaginal discharge for about two days.

Hysterosalpingogram

The hysterosalpingogram allows for the study of the uterus and the fallopian tubes. The procedure helps in the diagnosis of sterility problems, tubal strictures or occlusion, and any abnormalities in the uterine cavity. During the pelvic examination, a very small catheter is inserted into the cervix and radiopaque dye is injected into the uterine cavity and the fallopian tubes. X-rays are then taken.

The patient is usually prepared by being given a laxative the night before and an enema the morning of the examination to make sure that gas and stools do not distort the picture. The patient may complain of some abdominal cramping, nausea and vomiting after the procedure.

Dilatation and Curettage (D&C)

Dilatation refers to the expanding of the mouth of the cervix and curettage means scraping the endometrial lining of the uterus. The procedure may be done as a treatment to control uterine bleeding, to remove residue from an incomplete abortion, to diagnose the cause of abnormal bleeding and sterility. The patient may be hospitalized. A D&C is treated as a surgical procedure and is usually done under anesthesia. The uterine scrapings are examined microscopically.

Postoperatively, the patient may be returned with vaginal packing and a peri-pad in place. Change the peri-pad frequently to check the perineum and the amount of drainage. Give careful perineal care. The patient may have some difficulty voiding, especially if packing is in place, so check the time and the amount of voidings. She may complain of cramping and should be medicated for pain.

Directions: Answer the following review questions by filling in the blanks or by circling "true" or "false."

1. The visual examination of the vulva, the vagina and the cervix is known as the ________________ examination.
2. This examination (in question #1) requires an instrument, the ________________, which must be lubricated before insertion into the vagina.
3. When the physician inserts a finger into the rectum to feel the back surface of the uterus, the physician is doing a ________________ ________________ ________________.

LEARNING ACTIVITIES - continued

4. During the pelvic examination, the physician also swabs vaginal and cervical secretions that are tested to diagnosis cervical cancer. This test is known as a ________________ test.

5. You are to assist the physician during a pelvic examination and a PAP smear. List all of the equipment you must have ready for the physician (include at least four items).

   a. ____

   b. ____

   c. ____

   d. ____

6. The Schiller iodine test is another test used for early detection of cancer cells.
   TRUE FALSE

7. When the physician wants to confirm a diagnosis of cervical cancer, the physician may cut a piece of cervical tissue to be examined microscopically. This is known as a ________________ __________________.

8. A test using radiopaque dye that is done to study the uterus and the fallopian tubes is the ________________________.

9. The test in question #8 may be done if the physician suspects that the patient is sterile because of an occlusion in both fallopian tubes. TRUE FALSE

10. How is the patient prepared for the test mentioned in question #8?

    ____

11. If the patient is bleeding between her periods, the physician may scrape the lining of the uterus in a procedure abbreviated as a ___ & ___.

12. The inside lining of the uterus is known as the ______________________.

13. List three observations that you must check carefully when caring for the patient after a D&C.

    a. ____

    b. ____

    c. ____

ACTIVITY #7. Menopause

Directions: Read this material.

Menopause means the cessation of all menstrual activity. Another word climacteric is often used interchangeably with menopause. Menopause usually occurs between the ages of 45 and 55. This is frequently a time when children have grown up and left home and the woman must once again learn to live alone or with her husband. She may feel old, undesirable and unneeded. These feelings often contribute to symptoms of menopause.

The change is usually very gradual unless the ovaries are suddenly destroyed or surgically removed. Menopause is first recognized by changes in menstruation. The time between periods becomes longer and more irregular and the menstrual flow decreases until it finally stops. Since there are no more ova to mature, the production of estrogen and progesterone diminishes. The ovaries, the uterus and the vagina decrease in size. The hormonal imbalance is associated with easy fatigue, insomnia, nervousness, sweating, heart palpitations and headaches. In approximately 10 to 15 percent of all women, this hormone imbalance also causes intermittent, generalized vasodilatation that results in "hot flashes." During a hot flash, the face, neck and chest are noticeably flushed with a blotchy red color and the patient is very diaphoretic.

Some women may require mild sedatives and tranquilizers to control nervousness and to treat depression. Estrogen therapy, which is gradually withdrawn, may be used to make the transition easier, especially if hot flashes are persistent and severe. Time should be taken to do some teaching when you have a hospitalized patient experiencing menopause. This teaching should include providing the patient with the following information.

1. Menopause is normal and should not interfere with her sex life or her ability to function.
2. Over-fatigue should be avoided as it will exaggerate the symptoms.
3. A well-balanced diet is essential.
4. Patient should seek new interests and hobbies.
5. She should not forget to get an annual physical examination.

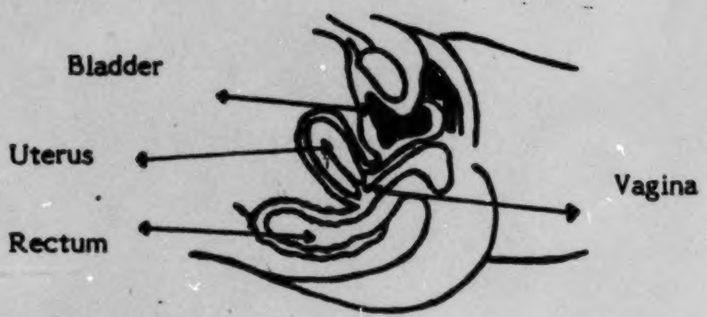
ACTIVITY #8. Conditions Resulting From Relaxation of Pelvic Muscles

Directions: Read this information.

Cystocele

Pelvic and perineal muscles hold the bladder, the uterus and the rectum in place in the pelvic cavity. Injury to the perineal tissues during childbirth, multiple births, adhesions from infections and congenital weakness may cause these muscles to relax allowing for the bladder, the uterus and the rectum to herniate or protrude into the vagina. A cystocele is the bulging of the bladder into the vagina. Study the picture on the following page.

LEARNING ACTIVITIES - continued



Signs and Symptoms

1. Stress incontinence. The patient will pass a little urine when coughing, sneezing, laughing or lifting heavy objects.

2. The patient may have difficulty completely emptying the bladder, resulting in residual urine and cystitis.

3. The patient may have a feeling of pelvic pressure.

Physician's Orders and Nursing Care

Treatment is the surgical repair of the anterior wall of the vagina, an operation known as an anterior colporrhaphy. Postoperative care may include:

1. Bedrest for the first 24 to 48 hours to prevent strain on the surgical area.

2. A Foley catheter to keep the bladder empty and to prevent strain on the vaginal wall. If the patient does not have a Foley catheter, you must be especially careful to observe urinary output and make sure the bladder does not become distended. You should notify the physician if the patient has not voided in 4 to 6 hours postoperatively, voids in small amounts, or has a distended bladder.

3. Encourage fluids to flush out the bladder.

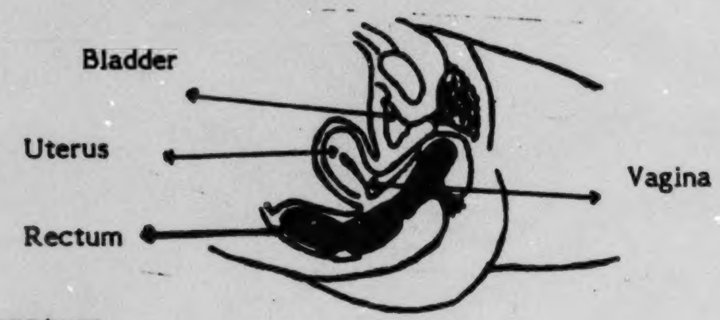
4. Heat lamp or sitz baths may be ordered to relieve pain and to promote healing. If both were ordered, which would you do first?

5. Give perineal care several times a day and observe for any redness, edema or drainage and include color, amount and consistency.

LEARNING ACTIVITIES - continued

Rectocele

The herniation of the rectum into the vagina is a rectocele. Study the picture below.



Signs and Symptoms

1. Backache
2. Difficulty with evacuation of stools and constipation.
3. Hemorrhoids

Treatment

Repair of a rectocele is a surgical procedure known as a posterior colporrhaphy or perineorrhaphy. The physician returns the rectum to its normal position and repairs the weakened vaginal wall. A cystocele and a rectocele may occur at the same time, requiring an anterior and a posterior repair, frequently abbreviated as an A&P repair.

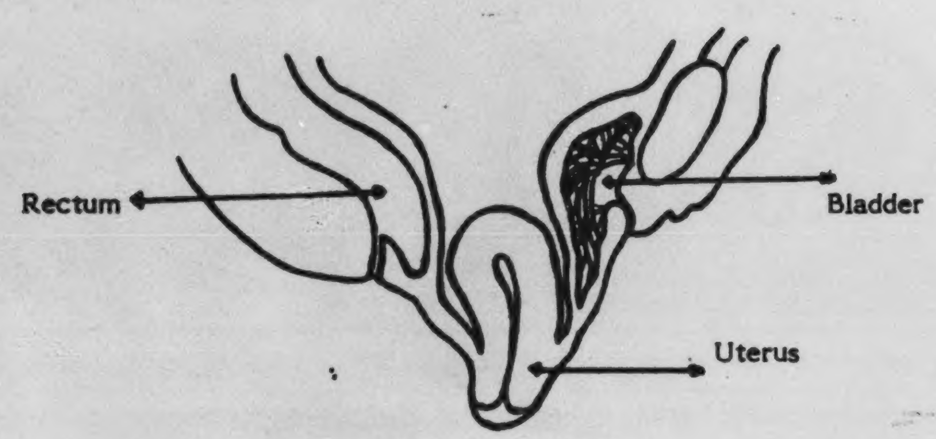
Nursing Care

Nursing care is similar to the care given to a patient with surgery for cystocele.

Uterine Prolapse

When the uterus slips below its normal level, it is prolapsed. The cervix or neck of the uterus may protrude into the vagnial opening or the entire uterus may hang outside of the body. Usually, as the uterus descends, the vaginal walls are so weakened that the bladder and the rectum also herniate. Study the picture on the following page.

LEARNING ACTIVITIES - continued



Signs and Symptoms

1. Backache; pelvic pain

2. Urinary stress; incontinence and retention.

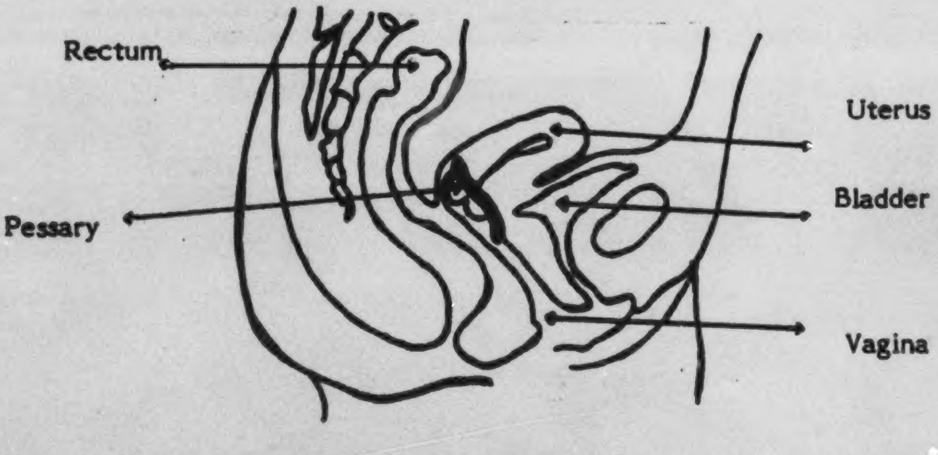
3. Feeling that "something is dropping out" experienced especially when lifting, coughing or standing for long periods of time.

4. Constipation.

5. Severe irritation and ulceration should the uterus prolapse outside of the body.

Treatment

Surgery is usually recommended to correct the uterine prolapse. The uterus is repositioned and sutured into place. An A&P repair is done. Since most of these patients are postmenopausal, a vaginal hysterectomy or removal of the uterus may be performed. If the patient's conditon is not suitable for surgery, a pessary, a device that looks like a ring or a button, may be fitted around the cervix to hold the uterus in place. Notice the position of the pessary in the picture below.



LEARNING ACTIVITIES - continued

Nursing Care

Postoperative nursing care includes:

1. Bedrest for two to three days usually with vaginal packing in place to prevent strain on the operative site.
2. Observing for vaginal bleeding. The patient may have sterile dressings held in place by a peri-pad or by a T-binder.
3. Frequent perineal care with sterile, warm saline especially after urination or a bowel movement.
4. Making sure the patient avoids constipation and instructing the patient not to strain when having a stool.
5. Giving heat lamp or sitz baths.

ACTIVITY #9. Vaginitis

Directions: Read this information.

Vaginitis is the inflammation and infection of the vagina. Normally, acid vaginal secretions and the presence of a natural bacteria in the vagina protect the vagina from infection. However, such organisms as e. coli, staphylococci, or streptococci may invade the vagina and cause infection (especially if the normal pH of vaginal secretions is altered or the natural bacteria are killed). Two very common causes of vaginitis are a protozoan, trichomonas vaginalis, and a fungus, candida albicans, which causes moniliasis. The latter is most common during pregnancy or after long-term antibiotic therapy. Since candida grows well in a sugar-rich environment, moniliasis is also common in poorly controlled diabetic patients whose urine frequently contains sugar.

Signs and Symptoms

1. Leukorrhea. A vaginal discharge that may be a profuse, yellowish mucous. Trichomonas causes a very frothy, white discharge and moniliasis is characterized by a cheesy appearance. The discharge may have a foul odor and may be so profuse that the patient requires peri-pads. A slight amount of white-colored or clear vaginal leukorrhea is considered normal at the time of ovulation or right before menstruation.
2. Severe pruritus or itching and burning.
3. Inflammation and some edema of vaginal tissues.
4. If the infection spreads to the urethra, the patient may have symptoms of a urinary infection.

LEARNING ACTIVITIES - continued

Treatment

Treatment may be directed toward killing the organism causing the vaginitis or toward encouraging the growth of the mature bacteria in the vagina. The physician may order vaginal douches of an antiseptic solution or a weak-acid solution to help vaginal secretions to return to their normal pH. An example of weak-acid solution is vinegar diluted with water. Medicated vaginal suppositories or cream(s) may be ordered or drugs may be taken orally. Treatment is usually given on an outpatient basis.

Nursing Care

You will be mainly responsible for teaching the patient how to care for the problem and how to avoid future problems. Nursing care includes:

1. If douches are ordered, explain the procedure for douching to the patient.

2. Teach the patient how to correctly insert a vaginal suppository or how to apply the ordered cream(s). Instruct her to lie down in bed with her hips elevated on a pillow; remind her to stay in this position for 10 to 15 minutes after the suppository or cream(s) has been inserted with the applicator. If no applicator is available, she should use her longest finger. Bedtime is a good time to insert the suppository since it will melt during the night and will usually not dislodge. A peri-pad may be worn to catch excess secretions. A tampon should be avoided since it may irritate the infected tissues.

3. Encourage the patient to shower instead of taking tub baths. Caution her that bubble baths, oil in her bath water and vaginal sprays may alter the normal pH of secretions and cause vaginitis.

4. Teach her that frequent douchings may also remove the natural vaginal bacteria and alter the normally acid secretions. Therefore, frequent douching may be contraindicated.

ACTIVITY #10. Review Exercise

Directions: Answer these questions by filling in the blanks or by circling "true" or "false."

1. A woman goes through ____________________ or climacteric when all menstrual activity stops.

2. What usually happens first to make a woman suspect that menopause is beginning? ____

3. What part of the ovary produces estrogen? ____________________

4. When ovulation occurs, the ruptured follicle, called the ____________________ produces both the female hormones, estrogen and ____________________.

5. Since these hormones are responsible for the growth and development of the ovaries, the uterus and the vagina, these organs will diminish somewhat in size after menopause. TRUE FALSE

LEARNING ACTIVITIES - continued

6. List at least four symptoms associated with the hormonal imbalance during menopause.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

7. "Hot flashes" are very common during menopause because of the hormone imbalance. TRUE FALSE

8. When the bladder herniates into the vagina because of weak pelvic and perineal muscles, the condition is known as a(n) ____________________.

9. One of the symptoms of the condition in question #8 is involuntarily passing of small amounts of urine when coughing, sneezing or lifting of heavy objects. This is known as ____________________.

10. An anterior colporrhaphy is the surgical repair of a cystocele.
    TRUE FALSE

11. Because the surgery for a colporrhaphy involves manipulation of the bladder, you would expect some postoperative problems with voiding and would not be too concerned until the patient has not voided for 12 hours. TRUE FALSE

12. If your patient has both heat lamp and sitz baths ordered, which treatment should you do first? ____________________

13. A rectocele is herniation of the vagina into the rectum. TRUE FALSE

14. If a cystocele and a rectocele are both surgically repaired at the same time, the operation is frequently abbreviated an ___ & ___.

15. When the uterus protrudes through the vaginal opening, it is ______________.

16. If the patient with the condition in question #15 cannot undergo surgery, the uterus may be held in place with a ______________, a ringlike device that is fitted around the cervix.

17. Inflammation and infection of the vagina is ____________________.

18. Trichomonas and moniliasis are two common types of vaginal infections. Which of these is most common during pregnancy and after long-term antibiotic therapy? ______________

19. The vaginal discharge that is a common symptom of vaginitis is called ______________.

20. Another symptom of vaginitis is severe itching or ____________________.

LEARNING ACTIVITIES - continued

ACTIVITY #11. Conditions Affecting the Uterus

Directions: Read this material.

Abnormal Uterine Bleeding

Menorrhagia is prolonged and profuse menstrual flow during the regular period. In young girls it may be a symptom of hormonal imbalance. Menorrhagia in later life is usually associated with ovarian or uterine tumors and pelvic inflammatory disease.

Metrorrhagia is bleeding between regular menstrual periods or after menopause. It requires early diagnosis and treatment even if the bleeding is just a scant amount because it is usually a symptom of some disease, possibly a benign or a cancerous uterine tumor. Metrorrhagia may also be a symptom of severe vaginitis or pelvic inflammatory disease.

Amenorrhea is the absence of menstrual flow. The most common cause is emotional upset, tension, nutritional disturbances or change in climate. It may also be associated with a pituitary or thyroid dysfunction. Remember, amenorrhea is normal during pregnancy and sometimes throughout lactation. The lack of menstrual flow does not necessarily mean that the patient is not ovulating.

Dysmenorrhea or painful menstruation is most common in adolescent girls due to the effects of progesterone on uterine contractions and on the blood vessels supplying the uterus. Anxiety, tension, poor posture, poor eating habits, little exercise and premenstrual fluid retention also contribute to dysmenorrhea. Other conditions that may also cause dysmenorrhea are displacement of the uterus, strictures of the cervix and the vagina and uterine tumors. The patient may complain of cramps in the lower abdominal area, backache, pain in the legs, chills, nausea and vomiting.

Fibroid Tumors of the Uterus

A fibroid tumor, also known as a myoma, is a benign tumor that grows in the uterine muscle tissue or on the surface of the uterus. It is the most common type of uterine tumor. The development of fibroid tumors is believed to be stimulated by the production of estrogen by the ovaries. They occur most frequently between the ages of 30 and 50 and often get smaller in size after menopause. The growth of the tumor is usually slow, except during pregnancy. The tumor may remain small or grow very large. The tumor may be a single tumor or may be multiple tumors.

Signs and Symptoms

1. Menorrhagia, which can cause anemia.
2. Dysmenorrhea
3. A feeling of pressure in the pelvic region.
4. Backache

LEARNING ACTIVITIES - continued

5. Constipation as the tumor becomes large enough to press on the rectum. It will eventually cause obstruction.

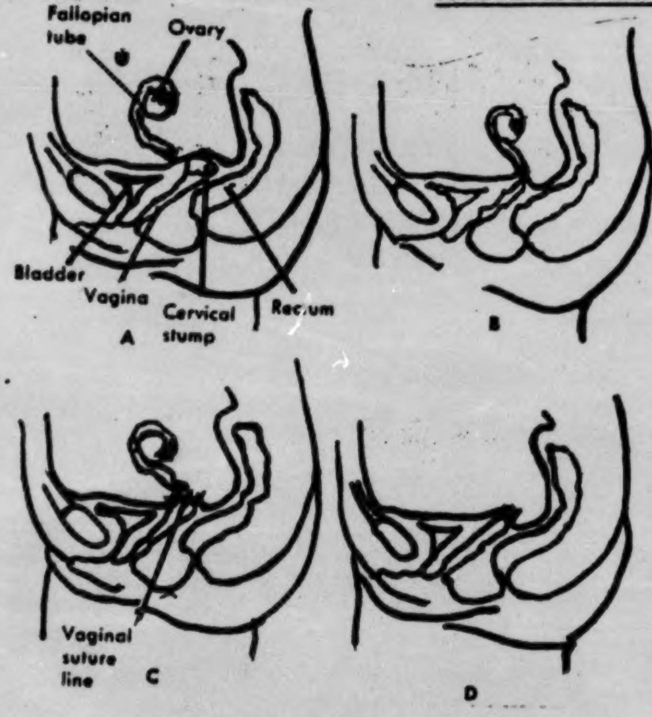
6. Urinary symptoms as the tumor presses on the bladder.

7. Sterility, if the tumor obstructs the fallopian tubes. The tumor does not necessarily interfere with pregnancy, but abortion is more common in women with fibroid tumors than in women without the tumors. Also, if the tumor is near the cervix, delivery may be very difficult or impossible.

Treatment

If the tumor is small and does not cause any major symptoms, the physican may choose not to treat the patient. However, if symptoms are severe, the tumor may be removed or the physician may decide to remove the uterus. Surgery to remove the uterus is a hysterectomy.

HYSTERECTOMY



A, Cross section of a subtotal hysterectomy. Note that the cervical stump, fallopian tubes and ovaries remain. B, Cross section of a total hysterectomy. Note that the fallopian tubes and ovaries remain. C, Cross section of a vaginal hysterectomy. Note that the fallopian tubes and ovaries remain. D, Total hysterectomy, salpingectomy and oophorectomy. Note that the uterus, fallopian tubes and ovaries are completely removed.

A total hysterectomy involves the removal of the entire uterus including the cervix. The patient will not menstruate, but since the ovaries remain, she should not experience symptoms of menopause and should not require hormone therapy. A hysterectomy may be performed using one of two different procedures, a vaginal or an abdominal hysterectomy.

With a vaginal hysterectomy, the uterus is removed through the vagina; the abdomen is not entered. Nursing care is similar to the postoperative care given the patient with a cystocele or a rectocele.

Study the following section of a nursing care plan for a patient following a vaginal hysterectomy.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Vaginal bleeding and pressure on surgical area	Bedrest the first 24 hours. Bed should be flat with head raised slightly PRN. May have vaginal packing in place such as iodoform.	To prevent strain on surgical area.
	Encourage voiding every 4 to 8 hours. May need to be catheterized if unable to void or if bladder is distended.	To keep bladder empty in order to prevent strain on vaginal wall. Bladder should not be allowed to accumulate more than 150 cc of urine for the first few days.
	May have urethral catheter. Make sure it is patent and is draining freely.	To prevent the bladder from becoming distended.
	Change peri-pad every 1 to 2 hours and PRN.	Observe for vaginal bleeding. Note amount and consistency.
	Prevent constipation.	To prevent strain on incision site.
Infection	Careful pericare with warm sterile saline after each voiding and bowel movement; blot area dry with sterile cotton.	To prevent contamination.
	Change peri-pad every 1 to 2 hours and PRN.	To prevent bacterial growth. A soiled pad is a good medium for bacterial growth.
	Give heat lamp treatment.	To help dry area. Bacteria grow best in warm, moist places.
	Temperature, pulse and respirations q 4 h for 48 to 72 hours.	Elevated temperature or pulse may indicate the beginning of an infection.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Pain	Medicate for pain as ordered.	To relieve pain.
	Anesthetic spray may be ordered.	
	Ice pack may be applied intermittently; bag must rest on the bed, not on the patient.	To prevent swelling and help to relieve pain.
Psychological problems. May be depressed, anxious or irritable.	Show your interest and concern.	May feel more comfortable about communicating her fears and needs.
	LISTEN	Patient needs to talk, not to listen to you talk.
	Answer all questions as well as you can. If you cannot answer, tell her you will find your team leader or her physician to answer her questions.	Will be less fearful and better able to cooperate if she understands her condition and treatment.
	Visit frequently before the call light goes on.	May feel more secure. She will know that you will not abandon her or avoid her.

In an abdominal hysterectomy, the uterus is removed through an abdominal incision. Study this section of a nursing care plan for a patient following an abdominal hysterectomy.

Patient Problem	Nursing Approach	Rationale
Voiding	Make sure the patient has voided 7 hours post-op; may need to be catheterized if unable to void.	Since the uterus is close to the bladder, edema or nerve trauma may cause temporary atony of the bladder.
	May need to be catheterized after each voiding.	To prevent residual urine that may cause bladder infection.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
(continued)	Foley catheter may be in place, be sure it is patent and draining.	
Infection	If allowed to change the dressing, use careful sterile technique.	To prevent contamination incision.
	Discard all old dressings in small plastic bag and place in trashbin outside the patient's room.	Old dressings in the patient's trashbasket are good media for bacterial growth; sight and smell of old dressing may be repulsive to patient.
	When changing dressing, check incision for drainage, inflammation or swelling along the edges.	Check for possible signs of infection.
	Temperature, pulse and respirations q4h for 48 to 72 hours.	Elevated pulse or temperature may indicate beginning of an infection.
Abdominal distention	NPO first 24 to 48 hours postop.	General anesthesia depresses normal peristalic movement.
	Listen to the abdomen with stethoscope for bowel sounds (gurgling).	Bowel sounds are very early signs of returning peristalsis.
	Ask patient if she has started passing flatus.	Passing flatus is a sign of returning peristalsis.
	Feel abdomen to see if it is distended.	Physician should be notified if abdomen becomes distended and hard to the touch. This may be a complication of paralytic ileus.
	May have nasogastric tube connected to suction.	To prevent accumulation of gastric juices and flatus.

LEARNING ACTIVITIES - continued

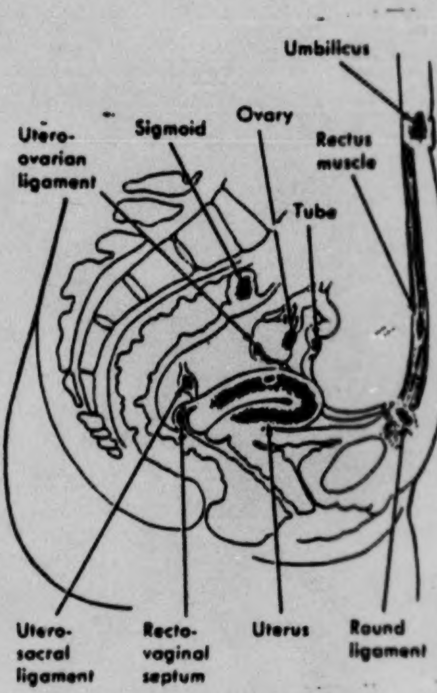
Patient Problem	Nursing Approach	Rationale
May have nasogastric tube connected to suction.	Make sure suction machine is on and that the tube is draining.	Nasogastric tube may need to be irrigated if it is not draining; if the tube is not draining, it is not serving its purpose.
	If allowed, ice chips or sips of water; give them SPARINGLY.	As water is suctioned back up through the nasogastric tubes, important electrolytes are washed out with it.
	Frequent oral care with glycerin swabs or by rinsing with mouthwash.	Patient is NPO; mouth will get very dry.
	Swab nostril with a little Vaseline.	To help prevent the breakdown of mucous membrane of the nose.
	Make sure tube is taped to the nose and pinned to the gown.	To prevent accidental removal of tube; tube that is moving or pulling on nose is very irritable to tissue.

Remember that this patient has had abdominal surgery under general anesthesia. What other patient problems and nursing approaches would you add to this general care plan?

Patient Problem	Nursing Approach	Rationale

LEARNING ACTIVITIES - continued

ENDOMETRIOSIS



Sites of endometrial implants.

The endometrium is the tissue that lines the uterus and is sloughed off during menstruation. Endometriosis is a condition affecting young women during their child-bearing years in which pieces of this endometrial tissue are found outside of the uterus, usually covering the ovaries, and throughout the pelvic cavity. Since these pieces of endometrium are under the same hormonal control as the endometrium that lines the uterus, they will bleed during the menstrual period just as the uterus does. However, since the displaced tissue bleeds into spaces that have no way to drain, the bleeding is painful and causes adhesions. Sometimes, the endometrial tissue is enclosed in a cyst or a sac attached to the ovary. This cyst is known as a chocolate cyst since it is filled with old blood from the monthly bleeding.

Signs and Symptoms

1. Severe dysmenorrhea, unlike uterine cramping, but more aching in the lower abdomen, in the vagina, in the pelvis and in the back.
2. Menorrhagia
3. Metrorrhagia
4. Pain on defecation
5. Sterility with scarring of the ovaries and occlusion of the fallopian tubes.

Endometriosis occurs during a woman's reproductive years and is usually relieved after menopause. The treatment is usually as conservative as possible to avoid interfering with childbearing. Ovarian cysts, adhesions and as much endometrial tissue as possible may be surgically removed. The physician may treat the patient with hormone therapy to prevent ovulation and to keep her from menstruating. If endometriosis is extensive and continues to cause severe symptoms, a hysterectomy with surgery to remove the ovaries and the fallopian tubes will be performed. Surgery to remove the ovaries is known as an oophorectomy. Surgical removal of the fallopian tubes is a salpingectomy. If both ovaries are removed, the patient will require hormone therapy to prevent menopausal symptoms.

LEARNING ACTIVITIES - continued

Cervicitis

Inflammation of the cervix, or cervicitis, is usually caused by streptococcal and staphylococcal infections but may also be due to gonorrhea or cancer. Cervicitis is a common problem especially after childbirth or an abortion. The condition may become chronic if untreated; it then becomes more difficult to cure. The constant irritation of chronic cervicitis is believed to lead to cancer of the cervix.

Signs and Symptoms

1. Leukorrhea.
2. Painful sexual intercourse.
3. Sensation of heaviness in the pelvis.
4. Some bleeding or spotting if the inflammation has caused erosion of cervical tissue.

Treatment is usually on an outpatient basis and may include orders by the physician for:

1. Antibiotic creams or suppositories.
2. Douches.
3. Electrocautery or cauterization if cervicitis is chronic. During the cauterization, the eroded tissue is touched with an electrical needle during a vaginal examination that destroys the infected tissue. The procedure is painless. Following cauterization, the patient is asked to rest more frequently for a day or two and can expect a grayish-green vaginal discharge for up to three weeks.
4. Cryosurgery is freezing the affected sections of the cervix.

ACTIVITY #12. Ovarian Cyst

Directions: Read this material.

An ovarian cyst is a sac attached to the ovary that may contain tissue or fluid. A chocolate cyst contains endometrial tissue and blood. A dermoid cyst may contain bones, skin, teeth and hair and is believed to be an unfertilized ova that spontaneously grew. The cyst may be very tiny and never cause any symptoms or it may grow to the size of a watermelon.

Signs and Symptoms

1. Irregular menstruation.
2. Sensation of heaviness in the pelvis.

LEARNING ACTIVITIES - continued

3. Dull, low abdominal pain.

4. Sudden, severe lower abdominal pain and hemorrhage if the cyst becomes twisted or ruptures.

Treatment

Treatment is surgical removal of the cyst, leaving as much of the ovary as possible. Sometimes, however, an oophorectomy must also be performed.

ACTIVITY #13. Pelvic Inflammation Disease (PID)

Directions: Read the following information.

Pelvic inflammatory disease is a severe inflammatory condition that involves the ovaries (ooporitis), the fallopian tubes (salpingitis), the peritoneum lining the pelvic organs and the veins in the pelvic cavity. The inflammation usually does not affect the uterus. Staph, strep and gonococcus are the most frequent causes of PID and usually enter through the vagina. The severe inflammation causes scar tissue adhesions. The salpingitis may result in sterility because the scar tissue occludes the fallopian tubes.

Signs and Symptoms

1. Foul-smelling, copious vaginal dischage. (Remember, this discharge is very infectious since it contains the bacteria causing the infection.)

2. Pain during sexual intercourse or pelvic examination.

3. Backache.

4. Severe lower abdominal and pelvic pain.

5. Menorrhagia and dysmenorrhea.

6. Fever.

7. Nausea and vomiting.

8. A CBC will show an elevated white blood cell count.

The Physician's Orders May Include:

1. Antibiotic therapy frequently given intravenously.

2. Local application of heat to the lower abdomen with an aqua-K pad, hot moist packs or sitz baths.

3. Warm vaginal douches.

LEARNING ACTIVITIES - continued

4. High protein, high calorie diet. (Remember protein is necessary to rebuild tissue. If scar tissue and adhesions are extensive, surgery to remove either one or both ovaries, the fallopian tubes and the uterus may be necessary.)

Nursing Care

Nursing care of the patient with PID is aimed toward controlling the spread of the infection within the patient and to others.

Study the nursing care plan below for a patient with PID.

Patient Problem	Nursing Approach	Rationale
Infection	Isolate the patient.	To prevent the spread of infection to others.
	Wear gloves when giving pericare or when changing peri-pad.	The vaginal discharge contains the infectious organism.
	Change peri-pad frequently and discard in small plastic bag or paper bag.	Patient usually has copious amounts of drainage; unchanged peri-pad provides source of further contamination.
	Give pericare with phisohex each time pad is changed and after patient uses the bedpan.	To prevent spread of infection to the perineum and urinary tract; also helps control odors.
	Do not allow patient to use tampons.	May obstruct the flow of drainage; may further irritate the inflamed vaginal tissues.
	Place patient in semi-Fowler's position at all times.	To help facilitate drainage and to prevent the spread of infection upward into the abdominal cavity.
	Disinfect bedpan, toilet and toilet seat according to the hospital policy each time they are used.	To prevent recontamination of patient.
	If the patient does some of her care, provide for good handwashing technique.	

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Psychological problems: feels guilty, embarrassed, depressed, fearful and irritable.	Show your interest and concern - do not be judgmental.	Patient will feel more comfortable talking with you.
	Venereal diseases may cause PID.	Major cause of PID is strep bacteria.
	Be professional; handle contaminated articles carefully, but do not look like you are afraid of being "contaminated"; do not comment on the drainage or the odors.	Do not further embarrass the patient; if you use good isolation technique, you will not become infected; if you do, it was not the patient's fault.
	Visit frequently.	Patient needs to feel confident.

ACTIVITY #14. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. Define these terms.

   a. Menorrhagia: ____________________

   b. Metrorrhagia: ____________________

   c. Amenorrhea: ____________________

   d. Dysmenorrhea: ____________________

2. A benign tumor that grows in the uterine muscle tissue or on the surface of the uterus is known as a(n) ______________ or a myoma.

3. Since the growth of these tumors is stimulated by the production of estrogen, they will frequently get smaller in size after menopause. TRUE FALSE

4. List at least three symptoms of a fibroid tumor.

   a. ____________________

   b. ____________________

   c. ____________________

LEARNING ACTIVITIES - continued

5. When the entire uterus including the cervix is removed, the operation is known as a(n) ________________________.

6. A hysterectomy will cause an artificial menopause. TRUE FALSE

7. When the ovaries are also removed during the hysterectomy, the operation permit must also specify that a(n) __________________ will be performed.

8. Surgical removal of the fallopian tubes is a(n) ________________________ .

9. If the uterus is removed through an abdominal incision, the operation is known as a(n) ________________________.

10. Because the uterus is very close to the bladder, voiding must be carefully observed in patients who have had abdominal and vaginal hysterectomies.
TRUE FALSE

11. When endometrial tissue is found outside of the uterus, the condition is known as ________________.

12. The condition from question #11 is most severe after menopause.
TRUE FALSE

13. A chocolate cyst is an ovarian cyst filled with endometrial tissue and old blood from the monthly bleeding. TRUE FALSE

14. Symptoms of endometriosis include severe dysmenorrhea, profuse menstrual flow, bleeding into the pelvic cavity if the endometrial tissue covers the pelvic organs and possible sterility. TRUE FALSE

15. The uterus is divided into the body and the neck or the ____________________ .

16. A common problem, inflammation of the neck of the uterus, is ____________ .

17. When cervicitis is chronic, the infected tissue may need to be destroyed with an electrical needle. This is known as ____________________________.

18. An ovarian cyst, containing skin, hair, bones and believed to be an unfertilized ova that spontaneously develops, is known as a(n) _____________ cyst.

19. An inflammatory condition that involves the ovaries, the fallopian tubes and the peritoneum lining the pelvic cavity is called ___________________ ___________________ _______________, which is abbreviated ________.

20. Pick out the symptoms of PID from the list below by circling the correct letters.

a. backache
b. nausea and vomiting
c. low CBC
d. metrorrhagia
e. severe pelvic pain
f. pain during sexual intercourse
g. menorrhagia
h. amenorrhea
i. subnormal temperature
j. leukorrhea

LEARNING ACTIVITIES - concluded

21. A patient with any infectious disease will probably be placed on a high protein diet since protein is necessary to rebuild tissue. TRUE FALSE

22. The patient with PID does not need to be isolated, since the disease is an inflammatory and not an infectious disease. TRUE FALSE

23. When caring for the patient with PID, you should discard soiled peri-pads in plastic or paper bags because the vaginal drainage contains the infectious organism. TRUE FALSE

24. What position is best for the patient with PID to help to facilitate drainage and to prevent the spread of infection? ______________________

25. The patient with PID may use tampons to catch the vaginal drainage since they are more absorbent. TRUE FALSE

ACTIVITY #15. Clinical Assignments

Directions: Read the following objectives that are specific to the care of patients with diseases of the reproductive system. You are responsible for their care, as well as the general clinical objectives, when assigned to such patients.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:
    a. Pain
    b. Fear
    c. Anxiety
    d. Pruritus
2. Demonstrate the nursing procedure for the following diagnostic tests given your assigned patients and determine if the test results were within normal range:
    a. PAP smear
    b. Schiller's test
    c. Dilatation and curettage (D&C)
3. Demonstrate:
    a. Acceptance of patient.
    b. Teaching breast self-examination and good health habits.

unit 17

NURSING CARE OF ADULTS

Module H - Nursing Care for Patients with Diseases of the Nervous System

RATIONALE

To give safe, effective nursing care to patients with diseases related to the nervous system, you must know the physiological and anatomical changes that occur and the signs and the symptoms to observe with each disease.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity #18 when given a clinical assignment of caring for a patient with a disorder of the nervous system.
2. Identify the preparation, procedure, postprocedure care and complications of various tests used to diagnose nervous system diseases.
3. Identify physiological changes that occur in patients with diseases affecting the nervous system.
4. Identify the causes, common signs and symptoms, treatments and prevention of diseases related to the nervous system.
5. In given situation questions identify the most appropriate nursing action used when giving care to a patient with a disease of the nervous system.
6. Identify vocabulary terms found in Activity #3.
7. Verbally describe or name the nursing action, patient symptoms, treatments and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the nervous system.

LEARNING ACTIVITIES

Directions: The information you need to complete Module H is included in this module and in the reading assignment from your textbook Total Patient Care, 5th edition. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to the nervous system and review Unit 4, Module J. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material found in this module and Unit 4. There are many diseases and conditions common to the nervous system; however, the diseases and conditions discussed in this module are most commonly found in hospitalized patients.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to the Nervous System

Directions: Read and study Chapter 20, "Nursing the Patient with Neurologic Problems." Now, review Module J, Part I in Unit 4. After this review, complete the following exercise.

1. Which two parts make up the central nervous system?

   a. ____________________

   b. ____________________

2. The largest part of the brain is called the ____________________.

3. List three mental activities that the largest part of the brain controls.

   a. ____________________

   b. ____________________

   c. ____________________

4. What is the function of the cerebellum? ____________________

   ____

5. What part of the brain makes up the brain stem? ____________________

6. What is the function of the part mentioned in question #5? ____________________

   ____

7. The spinal cord attaches with the __________ part of the brain stem and ends at the __________ vertebrae.

8. The spinal cord has __________ spinal nerves.

9. The membranes surrounding the brain are called ____________________.

10. Afferent neurons transmit impulses ____________________.

11. Efferent neurons transmit impulses ____________________.

12. Name the three parts of the neuron and give their functions.

    a. ____________________

    b. ____________________

    c. ____________________

LEARNING ACTIVITIES - continued

13. What are the six signs that indicate the sympathetic nervous system has been stimulated?

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

    f. ______________________________

14. What are the two parts of the autonomic nervous system?

    a. ______________________________

    b. ______________________________

15. What are the two main parts of the peripheral nervous system?

    a. ______________________________

    b. ______________________________

16. What is a reflex arc? ______________________________

17. Define synapse. ______________________________

ACTIVITY #2. Cranial Nerves

Directions: As you review Unit 4, Module 3, you are reminded of the 12 cranial nerves and their names. Many of the diseases and/or disorders affecting the central nervous system involve one or more of these cranial nerves.

List each nerve in order.

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________

LEARNING ACTIVITIES - continued

There is a rhyme to help you remember these nerves. The first letter of each word in the rhyme corresponds with the first letter of each nerve in numerical order. The rhyme is:

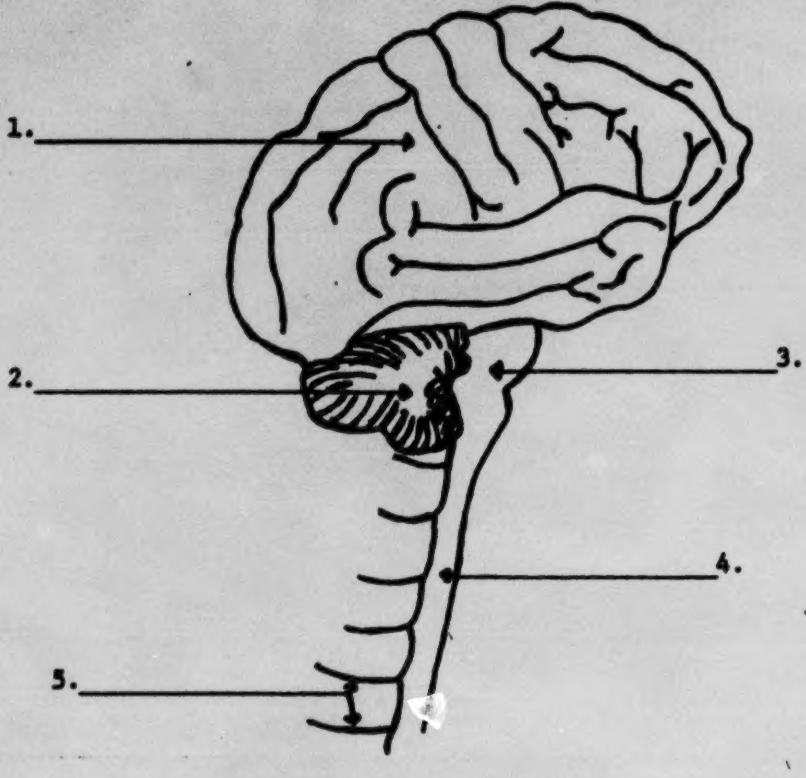
On Old Olympus Towering Tops, A Finn And German Viewed Some Hops.

Do a little research in a medical dictionary and then explain briefly the function of each nerve.

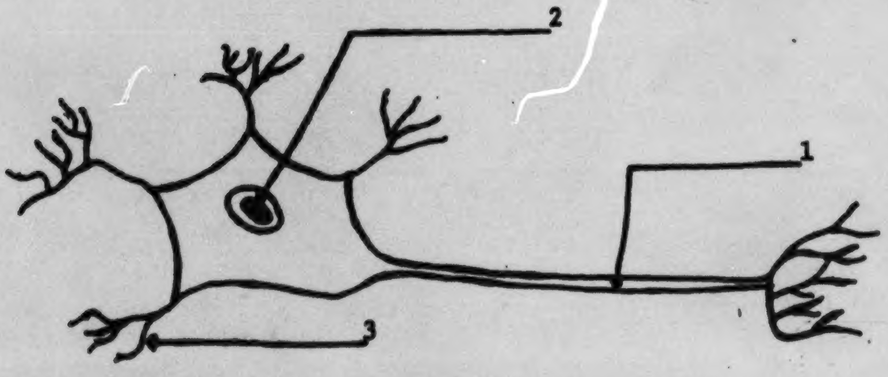
1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____
10. ____
11. ____
12. ____

LEARNING ACTIVITIES - continued

Directions: Label the parts that make up the central nervous system.



Directions: Label the parts of a nerve cell/neuron.



LEARNING ACTIVITIES - continued

ACTIVITY #3. Nervous System Terminology Review

Directions: Define the following terms.

1. A.D.L.: ______________________________
2. Akinesia: ______________________________
3. Alignment: ______________________________
4. Apoplexy: ______________________________
5. Atrophy: ______________________________
6. Bell's palsy: ______________________________
7. Brain scan: ______________________________
8. Cerebral angiogram (angiography): ______________________________
9. Clonic: ______________________________
10. Coma: ______________________________
11. Confusion: ______________________________
12. Contracture: ______________________________
13. Decubitus: ______________________________
14. Delirium: ______________________________
15. Disorientation: ______________________________
16. Extradural hemorrhage: ______________________________
17. Flaccid: ______________________________
18. Hemiplegia: ______________________________
19. Pain (intractable): ______________________________
20. Lamina: ______________________________
21. Logroll: ______________________________
22. Ménière's Syndrome: ______________________________
23. Neuralgia: ______________________________

LEARNING ACTIVITIES - continued

24. Neuritis: ____________________

25. Neurosyphilis: ____________________

26. Paralysis: ____________________

27. Tentorium: ____________________

28. Paraplegia: ____________________

29. Pneumoencephalogram: ____________________

30. Quadriplegia: ____________________

31. Reflex: ____________________

32. Rehabilitation: ____________________

33. Seizure: ____________________

34. Stupor: ____________________

35. Subdural hemorrhage: ____________________

36. Tonic: ____________________

ACTIVITY #4. Diagnostic Tests for Neurological Functioning

Directions: Read the following.

Neurological Examination

A physician performs a neurological sensory and motor examination with the assistance of a nurse to determine the presence of any disorders of the nervous system. A physician who specializes in the study of the nervous system is known as a neurologist. The first phase of any neurological examination is observation of the patient's mental status. The patient is asked simple questions to determine the level of consciousness, emotional reactions, memory and thought process. Questions you or the physician could ask are: "What month is it?," "How many children do you have and how old are they?," "Who is president of the United States?"

Other observations to determine the patient's mental status include the ability to speak, to read and to understand. The physician will perform different tests to see if the patient is able to smell, taste and see (complete eye examination). The patient is asked to raise his/her eyebrows, frown, stick out his/her tongue and show his/her teeth. All of these, and more specific tests, test for disturbances of the 12 cranial nerves.

LEARNING ACTIVITIES - continued

Muscles (motor function) are tested by examining the muscle for atrophy, coordination and strength. The patient grips both of your hands; you should check to see if one side is stronger than the other side. The patient also performs simple tasks like placing a finger to his/her nose.

Sensations of texture (flannel vs. burlap), temperature (cold vs. hot) and pain (pin stick) are also tested. This is done while the patient's eyes are closed. Different areas of the patient's body are touched with a cold test tube, a pin, etc. to determine if the patient can describe what she/he feels.

. The patient's walk is observed for any signs of unsteadiness, abnormal weakness or foot dragging.

Naturally, no examination is complete without checking the reflexes. The most common reflexes checked are the knee jerk, bicep jerk and plantar response in which the sole of the foot is scraped and the toes are flexed (Babinski's reflex).

Every nurse should know the basic questions to ask a patient and the observations to make on any neurological patient. The nurse should also know the physician's findings so that the nurse is capable of making meaningful observations.

Directions: Review Module J-2 in Unit 8, "Neurological Signs," and answer the following questions by filling in the blanks or by circling "true" or "false."

1. Why do we take neuro signs? ______________________________________ .

   ____

2. The normal response of the pupils to light is ________________________ .

3. What do you check the tongue for? ______________________________

4. What do you ask the patient to do with his/her arms? ________________

5. What does the patient squeeze to test his/her grip? _________________

6. You should check the patient's extremities for ______________________

7. Place your ________ against the patient's foot and ask the patient to press against it.

8. When checking the pupils, you should have the patient open his/her eyes and look out the window at the bright light. TRUE FALSE

9. If the patient is right-handed, his/her tongue should fall a little to the right. TRUE FALSE

10. If the patient is left-handed, the left-hand grip should be stronger than the right-hand grip. TRUE FALSE

LEARNING ACTIVITIES - continued

11. When a patient has VII cranial nerve damage, what will the handicap be? ______

____

12. Your patient was hit in the head with a baseball and is now blind.

    Which cranial nerve was affected? ______________________

LEARNING ACTIVITIES - continued

NEUROLOGICAL STATUS SHEET (HEAD)

Name									Frequency of Checks				
Level of Consciousness		Alert/oriented											
		Alert/disoriented											
		Drowsy/easily aroused											
		Drowsy/difficult to arouse											
		Stuporous											
		Comatose											
Pupils	Size	Equal in size											
		Not equal/right larger											
		Not equal/left larger											
	Reaction	Equally reactive											
		Right reacts only											
		Left reacts only											
		Both not reactive											
Motor Function	On Command	Right arm											
		Right leg											
		Left arm											
		Left leg											
	On Pain	Right arm											
		Right leg											
		Left arm											
		Left leg											
Speech		Normal											
		Slurred											
Babinski		Positive											
		Absent											
Date:		Time:											
Checked By:													

Estimation of motor function:

none - 0
minimal - 1+
moderate - 2+
good - 3+

LEARNING ACTIVITIES - continued

Lumbar Puncture (Spinal Puncture or Spinal Tap)

A lumbar puncture is performed by inserting a sterile needle into the subarachnoid space of the lumbar vertebrae between the third and the fourth vertebrae. Usually, this test is performed to obtain cerebrospinal fluid (CSF) for laboratory examination to determine the presence of bacteria, blood or pus and the amount of WBC, glucose and protein. The pressure within the spinal canal is also checked. This procedure is also performed for spinal anesthesia or to inject air or a radiopaque substance for x-ray visualization. It is usually done in the patient's room.

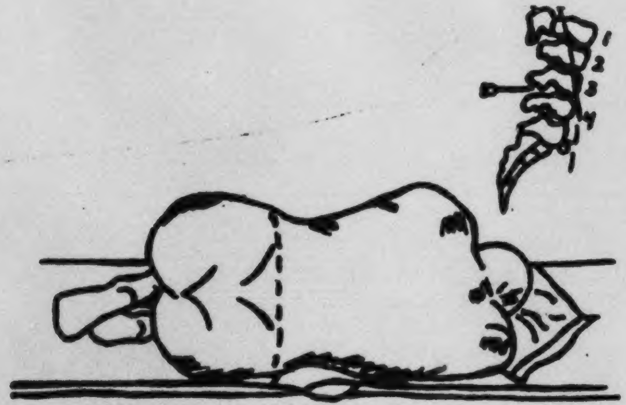
Preparation, Procedure and Postprocedure

1. Preparation

    a. The procedure is explained to the patient.

    b. A permit is signed by the patient.

    c. The patient is placed in a lateral position with his/her back as close to the edge of the bed as possible. (Some physicians prefer their patient to be in a sitting position.) You should assist the patient in maintaining this position.



Lateral position for lumbar puncture. The back is flexed and the knees drawn towards the chin as far as possible to obtain the maximal widening between the interspinous spaces.

2. Procedure

    a. The injection site is cleaned with Merthiolate and injected with Novocain.

    b. Under completely sterile conditions, the needle is inserted into the chosen site. Three test tubes, of 8 to 10 cc of spinal fluid each, are obtained.

LEARNING ACTIVITIES - continued

c. The test tubes are sent to the laboratory immediately.

d. If spinal fluid pressure is taken, it will be measured both before and after the fluid is removed.

e. The needle is removed and a bandaid is placed over the injection site.

3. Postprocedure

a. Activity orders vary with each physician. It is your responsibility to ask the physician if the patient should remain flat for four to six hours or if the patient may resume any activity.

b. You should encourage fluids to help replace the lost spinal fluid.

Myelogram

A myelogram is an x-ray of the subarachnoid space. The x-ray is taken after a lumbar puncture has been performed and air or a radiopaque substance has been injected into the subarachnoid space. This test is usually performed to determine if the patient has a slipped disc (HNP-herniated nucleus pulposus) or compression of the spinal cord.

Preparation, Procedure and Postprocedure

1. Preparation

a. The procedure is explained to the patient.

b. A permit is signed by the patient.

c. The physician may order the patient to be NPO after a light breakfast or four hours before the test is done.

2. Procedure

a. A lumbar puncture is performed.

b. Cerebrospinal fluid (CSF) is removed and the contrast medium (dye) is injected (6cc) into the subarachnoid space. (The needle is not removed.)

c. The patient is placed on his/her abdomen on the x-ray table. The table is then tilted so that the dye will move up and down the subarachnoid space.

d. X-rays are taken of the spine in various positions while the table is tilted.

e. As much of the contrast medium is removed as possible and the needle is then removed, because the irritation it causes to the membranes often results in headaches.

LEARNING ACTIVITIES - continued

3. Postprocedure

   a. If the contrast medium is removed, the patient remains flat (but may lie on his/her back or abdomen) for four to six hours.

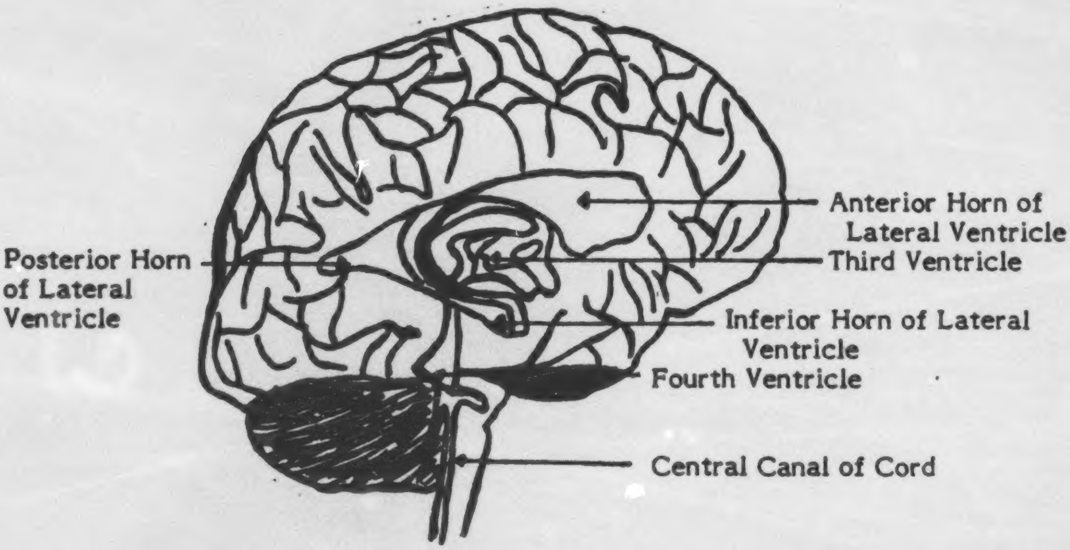
   b. The patient's head should be elevated slightly at all times if the contrast medium was not removed so that it will not move toward the brain and irritate the meninges.

   c. The patient may eat.

   d. The patient may have a severe headache. Flat bedrest will help prevent this.

Ventriculograms

In this procedure, air or oxygen is injected directly into one of the lateral ventricles. This procedure is only performed when no other procedure can provide the same information. The patient is usually very ill and a brain tumor or other cerebral deformity is suspected. Ventriculograms are always performed in surgery under the strictest sterile conditions and a craniotomy may follow the procedure immediately if a tumor is detected. Study the diagram below showing the ventricles.


Anterior Horn of Lateral Ventricle
Posterior Horn of Lateral Ventricle
Third Ventricle
Inferior Horn of Lateral Ventricle
Fourth Ventricle
Central Canal of Cord

The Ventricles of the Brain

Preparation, Procedure and Postprocedure

1. Preparation

   a. The patient or next of kin, if the patient is not coherent, must be told about the procedure and the risks involved.

LEARNING ACTIVITIES - continued

b. The patient is NPO after midnight or after 0800 depending on the time when the procedure is to be done.

c. A permit must be signed by the patient (or next of kin) and routine preop preparation is given.

2. Procedure

a. The patient is placed in a sitting position.

b. A needle is inserted into the ventricle and 20 to 50 ml of cerebrospinal fluid is removed and replaced with air or oxygen.

c. X-rays are taken.

3. Postprocedure

a. The patient is returned to bed and is observed carefully for the first 12 hours.

b. Vital signs and neuro signs q 30 min. x 4 then q 1 hr. x 10.

c. The patient should remain flat with a very slight elevation of his/her head for 12 hours; increase head elevation as tolerated.

d. Change position q 2 hr.

e. Encourage fluids if not counterindicated to help in the absorption of air in the ventricle and in the replacement of CSF. Usually, a regular diet can be tolerated the day after the procedure.

f. Headache, nausea and vomiting are the most common side effects of the procedure, but the patient should also be observed for shock, convulsions and chills.

Electroencephalogram (EEG)

An EEG (electroencephalogram) is performed to detect any electrical abnormalities in the brain or to detect the existence of any type of epilepsy.

Preparation, Procedure and Postprocedure

1. Preparation

a. Test is explained to the patient.

b. Absolutely no fasting or the brainwaves may be altered.

c. Sedation is given only if the physician wants a record of the brainwave activity while the patient is asleep.

LEARNING ACTIVITIES - continued

2. Procedure

   a. The patient is placed on a bed in the EEG laboratory.

   b. Usually 24 electrodes (small discs) are pasted to different areas of the patient's scalp and on each earlobe.

   c. The patient is instructed to keep his/her eyes shut and to remain relaxed while the EEG machine records the brainwaves. The patient will probably be in this position for one to two hours.

3. Postprocedure

   a. The paste should be removed from the hair and scalp with water.

   b. If no sedative is given, the patient may continue activities as previously ordered.

   c. If a sedative is given, the patient should remain in bed with the siderails up until fully awake.

EMI - Scanner and Computerized Axial Tomography (CAT) Scanner

These are two new methods used for examining parts of the body. Abnormalities of tissue density indicate possible tumor masses, infarctions and, in the brain, displacement of the ventricles, bone structures, etc. Both methods employ x-ray tubes and a sophisticated computer to evaluate the body tissues. The examination is painless although the large equipment used might be frightening.

Directions: Answer the following questions on diagnostic tests by filling in the blanks or by circling "true" or "false."

1. How do you determine a patient's mental status? ______________________________

   ____

2. What are the five main patient performances the physician checks in a neurological examination?

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

LEARNING ACTIVITIES - continued

3. Why should a nurse know how a physician performs a neurological exam?

____

4. Why should a lumbar puncture be done between the third and the fourth lumbar vertebrae? ____

____

5. When a spinal tap is performed, the physician usually removes about _____ cc of spinal fluid.

6. Fluids are encouraged after a spinal tap to _______________________ .

7. Why is a spinal tap performed? _______________________________________

8. A myelogram is performed in _______________________ department.

9. After having a myelogram, the patient may not move for four to six hours.
TRUE FALSE

10. Ventriculograms are performed in the patient's room. TRUE FALSE

11. When a ventriculogram is performed, _________________ is injected into the _______________________________.

12. Common side effects from a ventriculogram are:

    a. ____

    b. ____

    c. ____

    d. ____

13. The patient need not be NPO for an EEG. TRUE FALSE

14. The patient should remain in bed with the siderails up after an EEG if: ________

____

15. Two reasons why a physician would order an EEG are:

    a. ____

    b. ____

LEARNING ACTIVITIES - continued

ACTIVITY #5. Intracranial Pressure (ICP) and Brain Tumors

Directions: Read the following information.

Intracranial Pressure

When a patient has a suspected head injury, obvious concussion or fractured skull, neuro signs may be taken as often as q 15 min. x 4 then q 30 min. x 4 then q 1 hr. x 24. Check the pupils to see if they constrict and are equal in size and check for signs of increased intracranial pressure.

What is intracranial pressure (ICP)? It is exactly what the words indicate, pressure within the skull. The total brain is kept safe by the hard outer protection of the skull. This same skull that is so protective does not have any "give" to it. That is, if there should be swelling of the brain, hemorrhage or back up of spinal fluid, there is no room in the skull for expansion. Therefore, the pressure within the skull increases, due to the fact that more tissue (blood, fluid or pus) is within the skull. Confused?? Hang on!! It will all fall into place.

What can cause increased intracranial pressure? The usual causes are:

1. Concussion: a dull blow to the head causing brain damage and cerebral edema.

2. Contusions and lacerations: a sharp blow to the head that causes a cut, tear or break in the brain tissue leading to hemorrhage within the cavity.

3. Tumors within the skull: signs depend on where the tumor(s) is located; it may eventually cause increased ICP and some changes in normal neurological responses.

4. Fractured skull: pressure is not because of the damage to the bone, but because of the damage to the brain. With a blow or injury to the head, the brain moves in the skull and varying degrees of damage may result.

5. Block in the ventricle: makes it impossible for cerebrospinal fluid to leave the brain, thus creating a buildup of fluid.

6. Brain infections: some brain infections may cause swelling or inflammation of the brain, which results in increased ICP.

A change in the patient's level of consciousness is the first sign of increased ICP. Is the patient less responsive, hard to arouse or stuporous? Not only is a change in the state of consciousness important to observe, but also a change in personality. Is the patient more restless, more easily agitated or more aggressive? The personality changes may occur slowly or suddenly depending on the rate of fluid seepage or tumor growth. Just remember, always be alert and observant of whether or not your patient is alert and observant.

Symptoms

The physical signs and symptoms of a patient with increased ICP are quite specific.

LEARNING ACTIVITIES - continued

Signs and Symptoms	Why? Physiological Reason
1. Decrease in pulse and respiration and increase in blood pressure and temperature.	1. Intracranial pressure.
2. Pulse pressure widens with rapid fluctuation of pulse.	2. Critically increased intracranial pressure.
3. Increase in pulse and respiration, decrease in blood pressure.	3. Developing shock.
4. Dimming of vision.	4. Sign of intracranial hemorrhage on the affected pupil's side.
5. Pupils unequal, one is usually dilated and does not react to light (dilated and fixed).	5. Due to pressure on the brain.
6. Pain with headache that is most severe in the morning.	6. Swelling of the optic nerve.
7. Muscle weakness in the face.	7. Displaced brain tissue.
8. Vomiting or retching, usually sudden, without being nauseated (projectile).	8. Pressure on the medulla or the brain stem.

Not enough can be said about the importance of observing your patient for increased ICP. Good observations on your part can save a person's life.

Nursing Care of a Patient with Increased Intracranial Pressure or Head Trauma

We have discussed the causes and the signs of increased ICP. Now, it is time to discuss the nursing care. This is just a general outline of the care a patient should receive after a head injury. Some specialists believe that such a patient should get up and ambulate as soon as possible. Other specialists do not follow this philosophy. Therefore, each case may be different. Each subdural hematoma patient will have to be treated as an individual and care should be individualized.

Intracranial Brain Tumors (Commonly called Space-Occupying Lesions)

Brain Tumor: An area or space occupied by abnormal tissue and composed of abnormal nerve cells that attached themselves to supporting structures.

LEARNING ACTIVITIES - continued

Supratentorial Tumors: Tumors found above the tentorium.

1. Primary tumors of supporting structures of the brain.

   a. Gliomas

      (1) Astrocytomas: These are slow-growing types of tumors usually found in adults. They also occur in the cerebellum of children. One may have a headache for 6-9 months before any other localizing signs appear.

         (a) Complete surgical removal usually results in a long cure.

         (b) EEG: Slowing of background activity frequently seen with the presence of epileptiform discharges.

      (2) Oligodendroglimas: Also slow-growing, found mainly in adults and many times in the frontal lobe. They progressively become worse over 6 to 12 months before any localizing signs appear.

         (a) Can be removed surgically with good results.

         (b) EEG: Slowing of background activity or epileptiform discharge is present.

      (3) Ependymomas: Slow-growing tumors found in the linings of the ventricles and the roof of the fourth ventricle. No real symptoms are noted unless they are located in a critical area of the ventricles and progress to a crucial state before natural death, or before hydrocephalus occurs.

         (a) They can be removed surgically with good results.

         (b) EEG: Slowing and asymmetry of activity may be seen.

      (4) Glioblastomas: Fast-growing and very destructive, found anyplace in the cerebral hemispheres and mainly in adults. Patient has rapid onset of headache, convulsions, mental changes, paralysis and, in the more advanced stages, coma.

         (a) Surgery - brief relief with recurrance likely.

         (b) Temporary relief only.

         (c) EEG: Delta activity of a focal nature is usually found and is dependent on the severity of the tumor.

The tumor itself does not produce any electrical activity. It is the neurons around the tumor that are abnormal, causing a supression of the normal rhythms.

Abnormal activity could be from:

(a) Swelling of the brain tissue.

LEARNING ACTIVITIES - continued

(b) Lack of blood supply due to the tumor.

(c) Direct pressure of the tumor.

It is speculated that many childhood tumors are related to maldevelopment in embryonic life. The more embryonic the cells, the more malignant the tumor.

b. Tumors of the Meninges

(1) Meningiomas: Form in the middle meninges, the archnoid. They are slow-growing, taking 10 years or more. They lie above the cerebral cortex and below the dura mainly in the area of a rich blood supply, such as near the longitudinal sinus. They do not infiltrate the brain tissue but merely displace it. They are usually found in adults.

For years they lie symptomless, creating only occasional headaches. As they progress, one may have Jacksonian seizures or mental changes.

(a) Surgically they can be removed, but it is very difficult due to the large size, the critical position near a large blood supply and the difficulty in controlling the bleeding.

(b) EEG: Delta activity or epileptiform activity.

c. Metastases - Infratentorial Tumors under the Tentorium

(1) Medulloblastomas: Are gliomas located in the fourth ventricle and midline of the cerebellum. They are highly malignant but somewhat sensitive to x-ray therapy. They may also travel through the cerebral spinal fluid.

(2) Cerebellopontine Angle: These are slow-growing and appear pale with a shiny coat. They usually involve a nerve structure. Clinical symptoms accompanying these tumors are headache and tinnitus, which may lead to deafness, staggering gait or ataxia.

(a) Surgery is conditional for these tumors. Astrocytomas are seen in the same area as cerebellopontine angle tumors in children.

(b) EEG: Slowing of background activity, the slower the activity the more advanced the tumor.

(c) They are located between the pons and the cerebellum.

(3) Leukemia: (Tumors of the reticular tissue) Reticular tissue is defined as a tissue composed of fixed cells supported on a framework or fibril. Tumors of the reticular tissue may be caused by such a condition as leukemia. They are formed by the disease or by the elements in the circulating blood. The cells may infiltrate the brain to cause microscopic hemorrhages or softening of the brain, producing destructive effects to the brain.

LEARNING ACTIVITIES - continued

(4) Hemangioblastomas: (Tumors of the blood vessels) Found mostly in the cerebellum, also cause tiny hemorrhages that have many of the same characteristics as meningiomas.

The tumor itself does not produce any electrical activity. It is the neurons around the tumor that are abnormal, causing a suppression of the normal rhythms.

d. Clinical Symptoms

- (1) Increased intracranial pressure causing:
    - (a) Headaches
    - (b) Nausea
    - (c) Vomiting
    - (d) Pressure behind the eyes
- (2) Focal signs:
    - (a) Numbness
    - (b) Vision changes
    - (c) Ataxia
    - (d) Mental changes

Keeping all the information in Activity #5 in mind, study the care plan below and on the next page for a patient with a head trauma.

Patient Problem	Nursing Approach	Rationale
Increased ICP	Have head elevated above the heart (30-40°) at all times.	Improves circulation and fluid drainage from brain.
	Restrict fluid intake.	Decrease fluid in the brain thus decreasing ICP.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Fluctuating Vital Signs	Patient should always lie on side.	Decreases chance of aspirating or having the airway shut off by the tongue.
	Take pulse and respirations q 15-30.	The patient needs constant observation so changes will be immediately noted.
	Take pulse and respirations for a full minute.	Reports should be as accurate as possible.
Restlessness, may cause harm to self	Best action is constant care or a private-duty nurse.	Patient's condition can change rapidly and needs constant supervision.
	Very soft (quilted muslin) restraints.	Irritating strong restraints will aggravate the patient and increase restlessness, which is a sign of very poor nursing care. Make sure the restraints are absolutely necessary and soft.

If the patient is comatose or cannot give self-care, all the "good nursing care" techniques that you learned in Unit 8 about prevention of decubiti and repositioning a patient would apply here.

ACTIVITY #6. The Patient in Pain (Algia)

Directions: Read the following.

First, it must be understood that pain is a very complex physical and emotional experience that can have physical or emotional causes. Possibly a tumor is pressing on the nerves, causing excruciating pain. Or the patient, in a severely stressful situation that she/he cannot cope with, may develop severe pain. In either case, the pain is real to that person. This is a very important fact for the nurse to understand.

There are many observations that the nurse should make with the patient in pain. Some of these observations are:

1. Onset: When does the pain occur?
    a. Only between meals.

LEARNING ACTIVITIES - continued

  - b. Only when standing erect.
  - c. Only when a deep breath is taken.
  - d. Only when the husband/wife is present.

2. Location: Where does the pain occur?
   - a. In the right shoulder.
   - b. In the center of the left buttock.
   - c. Over the left eye.
3. Type of pain:
   - a. Sharp
   - b. Dull
   - c. Nagging
4. Duration: How long does the pain last?
   - a. Lasts until the patient sits down.
   - b. Lasts until the medicine is given.
   - c. Lasts until the husband/wife leaves the room.

The nurse should find out from the patient what aggravates the pain, where it is, how long it lasts and what relieves it.

Of course, pain with a physical cause is easier to relieve than pain with a psychological cause. The only way to relieve pain is to get rid of its cause. If there is a tumor, it can possibly be removed. If there is an emotional conflict, possibly psychiatric help should be sought.

Medication (analgesics) is the most common method of relieving pain but it should not be abused. Sometimes changing the patient's position, giving a back rub, turning off the television and providing peace and quiet can do more to relieve pain than any drug.

Intractable pain is pain that cannot be relieved by medication. This usually occurs in certain malignancies, neuralgia and spinal cord injuries. In these cases, surgery may be performed that destroys nerve tissue; therefore, it is only performed as a last resort.

The two most common operations performed to relieve intractable pain are a chordotomy and a rhizotomy. Rhizotomy is the cutting of the sensory point of the spinal nerve before it connects to the spinal cord. In a chordotomy, only a section of the spinal cord with sensory nerve fibers is cut. The area that was stimulated by these nerves no longer feels pain or temperature but does continue to feel other types of touch and sensation.

LEARNING ACTIVITIES - continued

ACTIVITY #7. Review Exercise

Directions: Answer the following questions by filling in the blanks or circling "true" or "false."

1. What causes increased ICP and why do they cause increased ICP?

____

____

____

____

____

____

2. What is the one thing you must do if your patient is suspected of having increased ICP? ______________________________

____

3. If one pupil is fixed and dilated, it usually means ______________________________ .

4. Pressure on what part of the brain causes vomiting? ______________________________

5. Due to pressure on the brain from hemorrhage, you could expect to see what symptoms?

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

6. Never restrain a restless patient with a head injury. TRUE FALSE

7. Why do you decrease fluids for a patient with increased ICP? ______________________________

____

8. Why does pulse and respiration decrease with increased ICP? ______________________________

____

LEARNING ACTIVITIES - continued

9. Medication cannot relieve intractable pain. TRUE FALSE

10. If a patient had a rhizotomy to relieve pain in the right leg, what precautionary measures should you explain to the patient about protecting that leg from harm?

    a. ______________________________

    b. ______________________________

    c. ______________________________

ACTIVITY #8. Ruptured Disc

Directions: Read the following material.

A ruptured disc, slipped disc or herniated nucleus pulposus (HNP) all refer to a similar trauma in the spinal column. Between each vertebra is a disc that acts as a cushion. This disc is held in place by ligaments attached to the vertebra. If a person who is lifting or pulling a heavy object does not know the proper body mechanics, too much strain placed on the back could cause tearing or stretching of the ligaments and squeezing of the disc until it ruptures. The ruptured disc then puts pressure on the spinal cord. Some discs "slip" without known physical exertion or other causes. Of course, the patient can expect pain at the site of the ruptured disc, but also the pressure on the spinal cord will probably cause pain to radiate down the affected side to the buttocks and the leg. It may be difficult for the patient to straighten up into an erect position and walk without pain.

Treatment

There are various treatments that the physician may order for such a diagnosis. At first, most of them will be very conservative.

Physician's Orders and the Nurse's Action	Rationale
1. Bedboards.	1. To keep the spine in alignment.
2. Bedrest or BRP.	2. To take pressure off the spine and prevent further damage.
3. Heating pad for lower back.	3. To relieve muscle spasms.
4. Physical therapy for heat and massage.	4. To relieve muscle spasms.
5. Pelvic traction. (See Module A - Traction)	5. To relieve pressure on tissue in lumbar region.
6. Backbrace.	6. To support the spine.

LEARNING ACTIVITIES - continued

Physician's Orders and the Nurse's Action	Rationale
7. Turn by logrolling.	7. To maintain spinal alignment (entire body moves at the same time).
8. Fracture pan (not bedpan) is used and the patient should roll, not lift, onto the pan.	8. To decrease stress and strain on the lower back where most HNP occur.
9. Encourage fluids and roughage.	9. To avoid constipation.
10. ROM - active and/or passive.	10. Lack of movement may cause constipation.

If the conservative treatment outlined on the previous page and above does not relieve the pain or discomfort, a myelogram is performed to verify a HNP and to determine exactly where it is. After this, surgery is usually recommended.

The surgical procedure is called a laminectomy. This means that the lamina of the vertebra is cut and the vetebral disc removed. If more than three discs are damaged, the surgeon will take a piece of bone from the iliac crest and graft it onto the spine to make that part of the spine immovable. This is a spinal fusion.

Nursing care consists mainly of making sure that the back is kept in complete alignment at all times. The patient should definitely be logrolled and remain flat in bed until the physician's orders permit otherwise.

ACTIVITY #9. Inflammatory Conditions of the Nervous System

Directions: Read the following information.

Meningitis

Three membranes and two spaces are located between the brain and the skull. These membranes are the pia mater, which lies flush with the brain, the arachnoid and the outer tough dura mater. The subarachnoid space contains cerebrospinal fluid and is located between the pia mater and the arachnoid layer.

The membranes are technically called meninges. Therefore, meningitis is usually an infection (not inflammation) of the pia mater or the arachnoid membranes. This infection may be caused by bacteria in the blood (systemic infection) or by an infection in the respiratory system or sinuses that traveled to the meninges from the site of the infection. It is most common in children and most dangerous in infants.

Since the pia mater is adjoined to the brain, there may be congestion or fluid retention in the outer brain cells or even degeneration of brain cells. Also, the cerebrospinal fluid will appear cloudy to milky white when a spinal tap is performed due to the increase in WBC caused by the infection.

LEARNING ACTIVITIES - continued

Patients suffering from meningitis are very uncomfortable and restless. They complain of severe headache, nausea and vomiting, diarrhea, stiff neck and general discomfort. Clinically, they have an elevated TPR. Due to the large number of antibiotics available now, patients can expect to recover from meningitis with no permanent damage. Previously, meningitis frequently resulted in mental retardation, paralysis or blindness.

Providing comfort for these patients and keeping them hydrated are the two most important nursing actions. Watch for signs of deterioration and seizures.

Study the following nursing care plan.

Patient Problem	Nursing Approach	Rationale
Restless with the possibility of physical harm to self.	Have siderails up at all times and pad them, if necessary.	To prevent injuries to the patient.
	Check on patient frequently.	Patient easily becomes disoriented.
	Restraints may be necessary.	To keep patient from climbing out of bed and being hurt.
Headache.	Keep shade drawn.	Light increases a headache.
	Keep the room as free from loud noises as possible (even if the phone has to be disconnected).	Noise also increases a headache and irritability.
Dehydrated.	Keep IV running on time.	Fluid intake is especially important if the patient has a temperature or is on sulfa drugs.
	Encourage fluids if not nauseated.	The more fluids taken in, the less chance of kidney complications.
	Accurate intake and output.	

LEARNING ACTIVITIES - continued

The patient will be in isolation through most if not all of the hospital stay. Remembering what causes meningitis, what secretions would you be most careful in handling? List them.

1. ____

2. ____

3. ____

Encephalitis

Encephalitis is an infection or an inflammation of the brain that may be caused by viruses, bacteria fungi, chemicals, toxins or injury. It may result from a reaction to a vaccination (smallpox or measles) or it may be transmitted to humans by infected mosquitoes or ticks called vectors.

Symptoms

The infection causes swelling (edema) of the brain. This, in turn, causes sudden symptoms similar to meningitis such as headache, nausea, vomiting, high fever and coma (thus, it is called "sleeping sickness"). Restlessness, irritability, disorientation and sometimes hallucinations can also occur.

Treatment and Nursing Care

Special care is taken with this patient to lower the temperature. Some ways of accomplishing this are:

1. Aspirin as ordered.
2. Tepid or cool sponge baths.
3. Hypothermia blanket.

Other care necessary is:

1. Maintenance of airway if the patient is comatose.
2. Padded siderails and rails up at all times.
3. Observe for any change in the patient's mental state, such as increased restlessness or changes in the sleep pattern. Check vital signs and neuro signs and chart them.
4. Give basic nursing care, the prevention of decubitis and overall good hygiene are very important.
5. Reassure and reorient as necessary depending on patient's mental state.

LEARNING ACTIVITIES - continued

Prevention

It takes many months to completely recover from encephalitis. It is much easier to prevent it from occuring. Avoid swimming in stagnant pools and keep inside or away from the bushes at night when mosquitos are most active. Be sure immunizations are obtained and kept current.

Be aware of wood ticks and avoid outdoor activities where they are found.

Poliomyelitis

Poliomyelitis is an infection of the motor cells of the spinal cord, the brain stem or the brain, although the spinal cord is most frequently affected. The infection causes destruction of nerve cells. A virus is the cause of the infection and it usually enters the body through the oropharynx.

A patient with polio must be isolated from the first questionable signs of the disease until the fever is normal for many days. Some public health officials believe that the patient should be isolated for a least two weeks. Special care should be taken to dispose of the oral and the nasal discharge and feces.

When destruction of motor cells in the spinal cord results, the signs of polio are pain and flaccid paralysis of the affected extremities. Heat by warm packs or by a heat light will help to relieve the muscle spasms and the pain. Later, braces and an exercise program are required.

When the destruction of motor cells in the brain results, the signs are discomfort and pain throughout the body and difficulty in breathing. Hot moist packs will help relieve pain from muscle spasms. A respirator may be needed if breathing becomes too difficult. Respiratory failure is due to involvement of the vital medullary centers. This is called bulbar poliomyelitis.

Prevention

Polio is prevented by the Salk vaccine injections or the oral Sabin vaccine. It is of utmost importance that everyone be vaccinated. Some people think that because the occurrence of the disease has decreased they no longer need to have their children vaccinated. Not so!! To keep the incidence of polio down, we must continue to have all children and adults vaccinated!

ACTIVITY #10. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling true or false.

1. HNP stands for ____ .
2. Pain radiating down the leg is caused by __________________________ .
3. How can you sometimes prevent a HNP from occurring? ______________

____

LEARNING ACTIVITIES - continued

4. What is a laminectomy? ____________________

5. The two most common causes of meningitis are:

   a. ____________________

   b. ____________________

6. List seven symptoms of meningitis.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

   e. ____________________

   f. ____________________

   g. ____________________

7. List two nursing approaches to help decrease the head pain with meningitis.

   a. ____________________

   b. ____________________

8. What type of isolation would be used with a patient who has meningitis?

   ____

9. What is the difference between meningitis and encephalitis? ____________________

   ____

10. Encephalitis is called "sleeping sickness" because ____________________.

    ____

11. Polio is caused by a(n) ____________ that enters the body through the ______

    ____

12. Polio, meningitis and encephalitis all should be isolated. TRUE FALSE

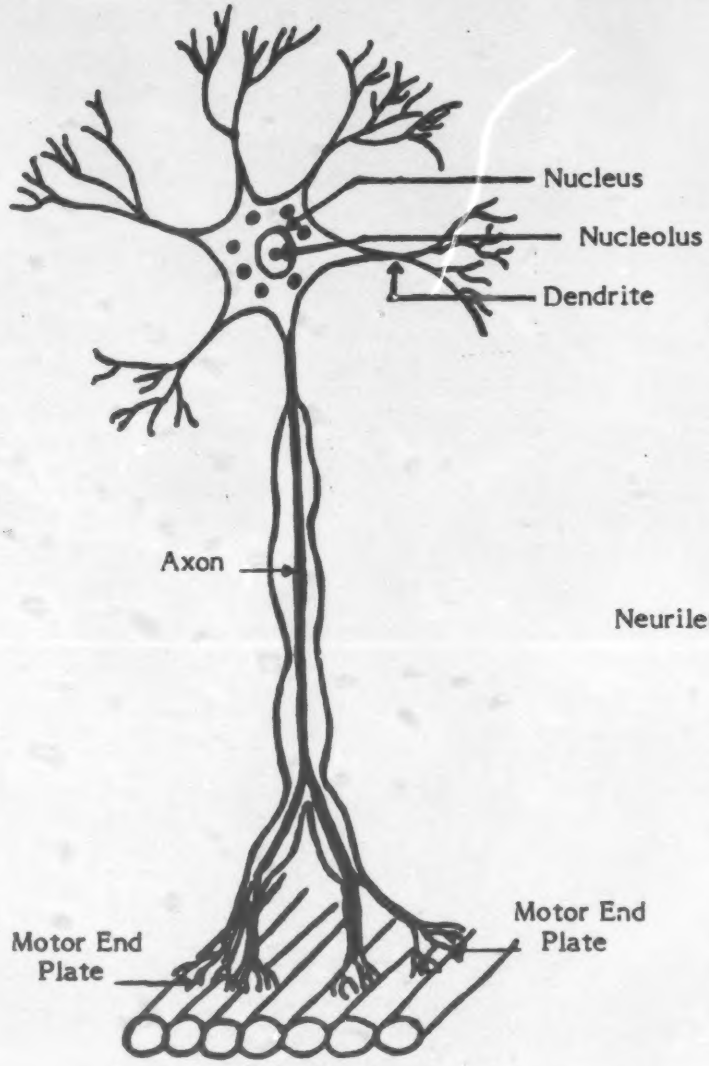
13. The best prevention for polio is ____________________

    ____

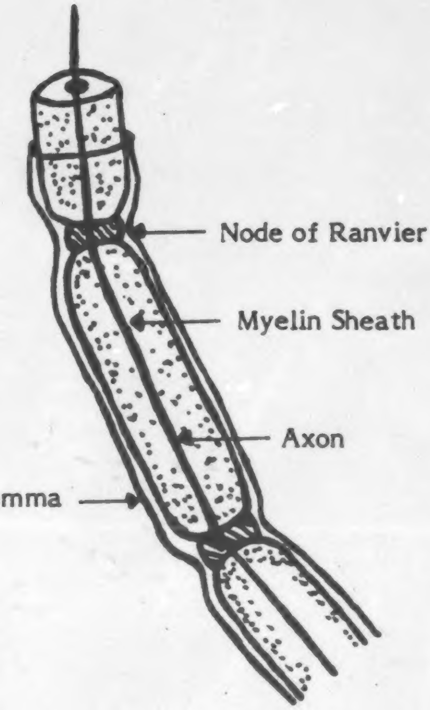
LEARNING ACTIVITIES - continued

ACTIVITY #11. Multiple Sclerosis

Directions: Study the diagrams below. Then read the following information. As you read the material, locate each part of the nerve cell in the diagrams.


Nucleus
Nucleolus
Dendrite
Axon
Motor End Plate
Motor End Plate

The Structure of a Neuron


Node of Ranvier
Myelin Sheath
Axon
Neurilemma

Nerve Fiber and its Coverings

The electrical impulse or nerve impulse travels from the dendrites to the cell body, to the axon and then to the muscle that the particular nerve stimulates to contract. Some axons are surrounded by a fatty sheath called myelin sheath. Axons that have this coating are believed to conduct impulses at a faster rate than unmyelinated nerves (no myeline sheath).

LEARNING ACTIVITIES - continued

In multiple sclerosis, which means many scars, there is a degeneration or a breakdown of the myelin sheath and of the axon. Therefore, the patient has scars or lesions located in patches along the axon. There is no pattern or reason why they appear in some nerves and not in others. This disease has no known cause.

Symptoms

Since the destruction of this fatty sheath can affect many nerves, the patient may experience a wide variety of symptoms.

Eyes: Blurred and double vision, uncontrollable circular movement of the eyeball.

Mouth: Chewing and swallowing difficulties.

Speech: Slow and slurred.

Extremities: Both the arms and the legs may experience muscle weakness, tremors, spasticity (tight) and poor circulation.

Since the cause is unknown, so is the cure. The patient experiences periods of remissions (few symptoms) and exacerbations (signs of severe symptoms) and each attack is more severe and more disabling.

Nursing Care

The nursing care consists of keeping the patient as active as possible. Occupational and physical therapy are important to keep the patient from becoming physically and mentally disabled. If the patient needs range of motion, see that it is received at least TID. If the patient needs emotional support, give all the help you can or arrange to have a social worker talk with the patient. Your responsibility is to observe the patient for symptoms and provide the best nursing care to control those symptoms. Fatigue should be avoided.

ACTIVITY #12. Parkinson's Disease

Directions: Read the following.

Parkinson's disease is the result of destruction and of atrophy to the nerve cells deep in the cerebral hemispheres and of dopamine deficiency. The cause of the cellular breakdown is not known. Arteriosclerosis may accompany Parkinson's disease and many patients have a history of encephalitis up to 25 years before signs of Parkinson's are noted. Also, lead poisoning and family heredity may be factors. How the patient acquired Parkinson's may be a mystery, but once acquired, the signs and the symptoms are unmistakable.

Symptoms

The three most common and easily identified symptoms of Parkinson's disease are:

1. Involuntary tremor
    a. Thumb continuously rubs against the fingers (pill-rolling effect).

LEARNING ACTIVITIES - continued

   b. Masklike expression on the face.

   c. Difficulty walking - shuffles.

2. Muscular weakness

   a. Mouth open; drooling.

   b. Difficult to lift hand to mouth.

3. Involuntary bending forward at the waist when sitting or standing. Since head is in front of feet, once the person starts moving forward or backwards, he/she picks up speed and moves faster and faster. Only a person, a door, a wall or the floor can stop someone who is shuffling too fast.

The more emotionally upset the patient becomes, the more severe the tremors become. Therefore, the patient who is trying to talk and cannot be understood becomes more frustrated and the tremors become worse. Then may become impossible to understand what is said.

These three basic symptoms bring with them a multitude of nursing problems. Listed below are some of the patient's problems, the nursing approach and the reason for each approach.

Patient Problem	Nursing Approach	Rationale
Head and upper trunk bending forward when walking.	Sleep and rest on a firm mattress with a pillow.	Helps keep the spine from curving.
	Walk with hands clasped behind the back.	Keeps the arms from falling forward or stiffly at the sides.
	Observe or assist when walking.	Good posture aids in preventing the body "getting ahead" of feet - resulting in loss of balance and possible injury.
Continuous drooling.	Have plenty of tissues on hand and in the patient's pocket and make sure patient can easily reach the waste basket.	Decreases actual drooling by eliminating saliva before it runs down the face.
	Protect pillow with towel during patient's nap or sleeptime.	Easy to change and soaks up more fluid.
	Cold cream around the lips and the chin.	Prevents chapping of skin if patient does drool.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Malnourished and constipated (slow, uncoordinated movements often prevents patient from eating enough food and drinking enough liquids).	Allow patient all the time needed to eat meals (even if it is an hour). Do not rush.	The patient is slower than most patients, but needs nutrients just as much.
	Order fingerfoods.	They are easier to handle than foods requiring a fork and spoon.
	If patient prefers to eat in privacy in the hospital, respect that wish and draw the curtain. (Do not encourage such thinking! But respect the patient's wishes.)	The patient may be embarrassed by drooling and the mess made during eating.
	Force fluids frequently.	The patient can only lift the glass and swallow small sips of water at a time.
	Encourage ambulation.	To increase intestinal motility.
	Provide six small meals a day.	Less tiring and the patient is happier for eating more.

Parkinson's disease, like so many other nervous disorders, cannot be cured. The most we can expect to do for the patient is to keep him/her as self-sufficient as possible for as long a time as possible. The patient should be encouraged to alternate periods of exercise and rest, to have physical therapy to decrease muscle rigidity, to have a good understanding of the disease and a good mental or emotional outlook that can come from a loving family, from friends at home and an understanding and patient staff in the hospital!

Look up the following medications:

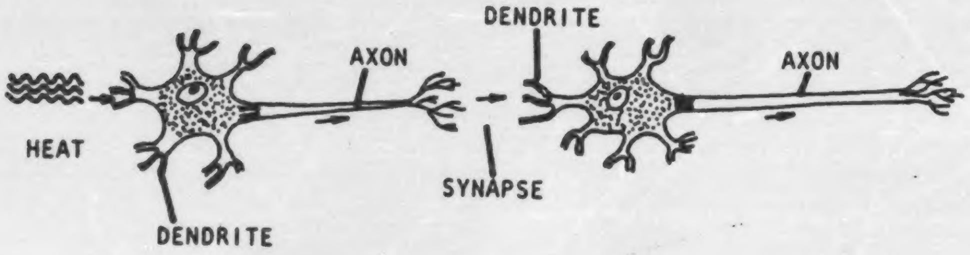
1. LARODOPA
2. L-DOPA

LEARNING ACTIVITIES - continued

ACTIVITY #13. Myasthenia Gravis

Directions: Study the diagram below, then read the following information.

Nerve Impulse Pathway



Synapse
(the region over which an impulse must pass)

Impulses are passed from the axon of one neuron to the dendrite of another neuron. To accomplish this a chemical is produced at the very tip of the dendrite that stimulates the second nerve and starts the impulse. This same chemical is released where a nerve joins a skeletal muscle. At this point, the chemical does not stimulate another nerve, but rather a voluntary muscle.

Myasthenia gravis is a disease in which the muscle does not contract as it should due to some disfunction in the nerve, chemical or muscle response to the chemical. Therefore, the person will have progressively weaker muscles.

As with so many diseases, the cause of myasthenia gravis is not known. Also, only 25% of the patients experience periods of remission. The disease continues to progress at a slow and steady pace until the muscle becomes so flaccid that the patient develops a paralysis.

The muscles most often affected are those used to keep the eyelids open (ptosis), to chew, to swallow, to speak and to breathe (diaphragm and intercostal muscles). Weakness in the neck muscles may cause the head to bob. Other muscles may be affected causing general weakness and fatigue of the entire body. Death can occur rapidly due to respiratory failure or aspiration.

Some medications have been discovered that decrease the breakdown of the chemical at the synapse, so people are able to live longer after early diagnosis. The medication is very important in the care of the patient. It must be administered at the right time or the patient may become too weak to swallow. It is the nurse's responsibility to see that the medication is given on time. Medications rarely control all the symptoms, so other supportive measures are required also.

LEARNING ACTIVITIES - continued

The "typical" (if there is such a thing) patient with myasthenia gravis will probably be most active in the morning after the first dose of medication and after rest. Later you may see this same patient with head tilted back slightly to see better since he cannot keep his eyelids open. Or a patient may hold her jaws together with her hand because the muscles are so weak the mouth would fall open. The entire body becomes weak and breathing becomes more and more difficult.

Below are some care plan measures to keep in mind when caring for a patient with myasthenia gravis.

Patient Problem	Nursing Approach	Rationale
Muscle weakness.	Have the patient do most care early in the morning.	The patient is strongest then, especially following medication.
	Never allow the patient to get too tired.	It will frighten the patient causing the effect to snowball and cause greater weakness. Such weakness may cause complications such as choking or aspirating.
	Have patient plan frequent rest periods.	To regain strength.
Difficulty in chewing.	Give medication 1/2 to 3/4 of an hour before meals.	Medication will begin to work by the time the meals are served.
	Order soft or full liquid diet as indicated.	Decrease amount of effort needed to chew food.
	In latest stage, the physician may order tube feedings.	Primarily to decrease chances of aspiration and to assure that proper nutrition is received.

Finally remember that sedatives are very rarely given to patients with this disease and morphine sulfate is always contraindicated.

ACTIVITY #14. Epilepsy

Directions: Read the following.

Epilepsy is one of the many types of convulsive disorders. Epilepsy is defined as "Hippocrates had intended," meaning seizure. Seizures or attacks (never "fits") are caused by some change in the chemical makeup of the brain or scar tissue. This change also alters the brainwaves so that emotional or sensory (sight or hearing) stimuli may trigger the physical seizure. Is it complicated? Think of it as the nerve stimuli's getting lost in the brain and accidentally stimulating a seizure.

The attacks may have many causes, such as high fever, brain lesions or tumors. The real cause of epilepsy is unknown. At one time, the medical profession thought epilepsy was inherited. Now, however, even though research cannot find evidence of the cause of the disturbance of the brainwaves, the medical profession believes that heredity has been overemphasized.

The two basic types of seizures are grand mal and petit mal.

Grand Mal

The five steps or stages to observe when a patient is having a grand mal seizure are listed below.

1. Seizure is preceded by an aura - a momentary warning. The person either sees, smells, tastes or hears something that is recognized as a warning that a seizure is about to happen. It is different for each person but each person should know what his/her aura is.
2. The aura is followed by a cry, caused by spasms in the abdomen, the thorax and the glottis. Air is forced through a spasmatic throat, which makes a crying sound.
3. Respirations momentarily stop (apnea) and the person becomes cyanotic. At this time, clonic and tonic movements cause the jerking of the face muscles and extremities.
4. Breathing continues and is usually labored, the teeth are clenched and the person is usually incontinent.
5. The person relaxes and is unconscious from a few minutes to hours.

Petit Mal

In a petit mal seizure, the person has a blank stare caused by a momentary loss of consciousness (amnesia) that lasts a few seconds. That's all. The problem with petit mal seizures is that the individual loses consciousness with no warning. If the person is riding a bike in heavy traffic and momentarily loses consciousness, his/her balance will probably be lost too. Or, a person carrying a cup of hot coffee could drop it and be burned. Often this type of seizure goes unnoticed by all except the person having it.

LEARNING ACTIVITIES - continued

If you near a person convulsing for any reason, try to do the following:

1. Protect the head by placing a soft object (a pillow, folded sweater, coat, etc.) under it.
2. Loosen the clothing especially around the neck and the chest.
3. Place a firm, soft object (padded tongue blade or leather belt) between the teeth, but if the teeth are clenched tightly do not try to pry them open.
4. Remove any nearby objects that the person could hit or harm.
5. Do not restrain the person. This may increase the spasms and may even cause fractures.
6. After the seizure is over, the person should be placed on his/her side to decrease the chance of aspirating saliva.

The nurse in the hospital has specific observations that must be made if a patient has a convulsion. These observations are:

1. Don't leave the room, call for help.
2. Note the exact time the seizure started.
3. Did the patient have an aura or cry out?
4. Did the patient become cyanotic?
5. Did any particular part of the body twitch or jerk more than any other part?
6. Was the patient unconscious after the attack was over?
7. How long did the attack last?
8. Did the patient have any difficulty talking or moving after the attack was over?

Many, many observations can be made when a patient has a seizure. Can you think of any other questions to ask yourself while observing a patient having a seizure? List them below.

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________

LEARNING ACTIVITIES - continued

In summary, the two main things to remember when you find a person having a seizure are:

1. Protect the person from injury.
2. Observe the person every second.

ACTIVITY #15. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. With multiple sclerosis, there is a tissue breakdown of the ________________ and the ______________________.

2. Because of this tissue breakdown, the symptoms of this disease are:

   a. ____

   b. ____

   c. ____

   d. ____

   e. ____

   f. ____

3. The rationale behind all nursing approaches for a patient with multiple sclerosis is to ____ .

4. The cause of Parkinson's disease is ______________________________ .

5. You should try to keep the patient with Parkinson's disease on an emotionally even level because ______________________________________ .

6. The three most common symptoms of Parkinson's disease are:

   a. ____

   b. ____

   c. ____

LEARNING ACTIVITIES - continued

7. Nursing approaches to counteract effects from the patient's continuous drooling are:

   a. ______

   b. ______

   c. ______

   d. ______

   e. ______

8. The muscles most affected by myasthenia gravis are the ones used by:

   a. ______

   b. ______

   c. ______

   d. ______

9. An important nursing approach for a patient with myasthenia gravis is: ______

   ______

10. List two nursing approaches taken when a patient with myasthenia gravis has difficulty chewing.

    a. ______

    b. ______

11. You should never say that a patient had a fit, but you should say that he/she had a(n) ______ or a(n) ______.

12. The cause of epilepsy is ______.

13. List the happenings (in their proper order) during a grand mal seizure.

    a. ______

    b. ______

    c. ______

    d. ______

    e. ______

LEARNING ACTIVITIES - continued

14. When you find a patient having a seizure, the first thing that you should do is try to get a tongue blade into the mouth. TRUE FALSE

15. The two main things to remember when you find a patient having a seizure are:

    a. ______________________________

    b. ______________________________

ACTIVITY #16. Cerebrovascular Accident

Directions: Read the following.

A cerebrovascular accident (CVA) may be caused by:

1. A cerebral embolus: The closing off of an artery in the brain, thus cutting off the blood supply to that part of the brain.
2. A cerebral hemorrhage: The rupture of an artery in the brain causing bleeding in the brain, pressure and a lack of blood supply to parts of the brain.
3. A cerebral thrombus: The narrowing of the opening or diameter of an artery because of disease within the arterial wall. It can cause complete closure of the artery and decrease blood supply to the brain.

Symptoms

Whatever the cause of the interrupted blood supply to the brain, the signs and symptoms are similar but vary greatly depending on which part of the brain is affected.

At first, most CVA patients are unconscious for a period of time. Once they regain consciousness, they usually show signs of spastic muscular motion on one side of the body. This is called hemiplegia. The patient with hemiplegia is unable to control the movements of the affected side of the body, thus bringing about physical problems of immobility and emotional problems of frustration and dependency. Frequently, the patient also has difficulty in speaking (dysphasia) or understanding spoken words. A flaccid paralysis of the muscles on one side of the body is often the result of a CVA. If the damage to the brain occurs on the right side of the brain, the left side of the body will be affected and vice versa.

Nursing Care

Stating that the nursing care given to a patient with a CVA is symptomatic seems like too general statement. But that is exactly what can be said about caring for a CVA patient. Each patient with a CVA is unique. But remember at all times to:

1. Prevent deformities (body alignment, range of motion).
2. Treat the patient with respect and as an adult at all times even if he cannot always speak or can only speak in childlike phrases.

LEARNING ACTIVITIES - continued

3. Beginning therapy soon after the CVA is important (before abnormal chemicals build up in flaccid muscles).

Directions: Review Module B-3 in Unit 8 and then answer the following questions on positioning patients.

1. When placing a CVA patient in dorsal position, be sure that the linen is not too tight to cause ______________________________ .
2. Sim's position is ______________________________ .
3. When the head of the bed is elevated, it is called ______________ position.
4. When raising the head of the bed, check with the patient to see if he feels ______________.
5. You should change a patient's position at least every _____ hours.
6. If the patient's left side is paralyzed, a(n) ______________ should be placed by her left hip when she is in a supine position.
7. When in a supine position, the patient's toes should be ______________ .
8. When positioning a patient, a limiting factor is ______________ .
9. To position the hand and the wrist, use a(n) ______________ .
10. When a CVA patient lies on his uninvolved side, his pillow should be placed under his ______________ and his ______________.
11. When lying in a prone position, the patient's feet should be placed ______________ or ______________.
12. Changing a patient's position helps to ______________ and to prevent ______________.
13. How would you instruct a patient with an involved right side to turn herself to her left side?

ACTIVITY #17. Spinal Injuries

Directions: Read the following.

Injuries to the spine may involve only the boney structure of the vertebrae or the vertebrae and the softer tissue of the spinal cord.

These injuries can be caused by:

1. Tumor growth.

2. Ruptured intervertebral disc.

LEARNING ACTIVITIES - continued

3. Injuries (e.g. gunshot, falls, diving).

4. Metastatic cancer.

These injuries can occur anywhere along the spinal cord and are referred to by their location. For example: cervical, thoracic, lumbar. When a spinal cord injury occurs, the patient experiences impairment of movement or complete paralysis below the site of the injury. If all four limbs are involved QUADRIPLEGIA may result. If only the lower two limbs are involved PARAPLEGIA may result.

Below are a few of the specific nursing problems you will be dealing with.

Patient Problem	Nursing Approach	Rationale
Maintaining proper body alignment.	Hinged bedboards are added under the mattress.	To prevent unnecessary dorsal bending of the spinal column.
	Bilateral trochanter rolls, hand rolls, sand bags, footboard and bed cradle.	To prevent external rotation, contractures to prevent food drop.
Impaired sensations below the injury.	DO NOT use hot-water bottles or heating pads.	The spinal injury impairs sensations of burning or pain.
Diaphoresis	Frequent bathing to keep skin clean and dry.	To prevent skin breakdown.
	DO NOT USE POWDER.	Powder holds moisture increasing skin breakdown.
	Reposition q2h.	To allow skin to air dry.
Impaired mobility.	ROM-active and/or passive q2 TCDB q2.	To promote circulation to prevent contractures to ventilate all parts of the lungs and to clear out accumulating secretions.
Urinary retention.	Bowel and bladder training.	To prevent retention and potential for infection.
Fecal impaction.	Bowel and bladder training.	To prevent constipation and impaction.

LEARNING ACTIVITIES - concluded

ACTIVITY #18. Clinical Assignments

Directions: Read the following objectives that are specific to the care of patients with diseases of the nervous system. You are responsible for their care as well as the general clinical objectives, when assigned to such patients.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing measures to alleviate:
   a. Pain
   b. Fear
2. Demonstrate the nursing procedure for the following diagnostic tests given your assigned patients and determine if the test results are within normal range:
   a. Neurological examination
   b. Lumbar puncture
   c. X-rays - ventriculogram, pneumoencephalogram
   d. Cerebral angiogram
   e. Myelogram
   f. Electroencephalogram
   g. Brain scan
3. Demonstrate nursing care of patients with therapy specifically related to the nervous system. Include the following:
   a. Observe for neurological signs and symptoms.
   b. Demonstrate means to prevent further injury.
   c. Teach rehabilitation.

NURSING CARE OF ADULTS

Module I - Nursing Care for Patients with Diseases of the Eye and the Ear

RATIONALE

To provide safe, effective nursing care to a patient with diseases relating to the eye and the ear, you must know the physiological and anatomical changes that occur and the signs and the symptoms to observe with each disease.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity #19 when given a clinical assignment of caring for a patient with disorders of the eye and/or the ear.
2. Identify the normal anatomy and physiology and the anatomical and physiological changes that occur with diseases of the eye and the ear.
3. Identify the causes, common signs and symptoms, prevention, treatment and complications of diseases related to the eye and ear.
4. In given situation questions identify appropriate nursing actions for a patient with an eye or ear disease.
5. Identify and demonstrate the correct methods for eye and ear irrigations and instillation of medication.
6. Identify vocabulary terms from Activity #2.
7. Verbally describe or name the nursing action, patient's symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with disorders of the eye and the ear.

LEARNING ACTIVITIES

Directions: The information you need to complete Module I is included in this module and in the reading assignment from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and diseases relating to the eye and the ear and review Unit 4, Module J - Part II and Part III. Exercises are included to help you learn the material. The answers for these exercises can be found by reviewing the material found in this module and Unit 4. Many diseases are common to the eye and the ear; however, the diseases discussed in this module are most commonly found in hospitalized patients.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to the Eye and the Ear

Directions: Read and study Chapter 21, "Nursing the Patient with Problems of the Eye and the Ear," and review Unit 4, Module J - Part II and Part III. After reviewing the material in Unit 4, answer the following questions by filling in the blanks.

1. The three layers of the eye are the ____________, ______________ and ______________.
2. Light enters the eye through the ________________________________.
3. The ____________ controls the amount of light entering the eye.
4. Directly behind the iris is the ______________________.
5. We are able to see far and near because the ________________ changes shape.
6. The opening in the iris is the ________________.
7. The pupil _____________ when a person is in bright light and _______________ when one is in darkness.
8. The white of the eye is called the _________________.
9. The fluid in front of the iris and the lens is called ____________________.
10. The fluid behind the lens is called ____________________.
11. Lacrimal glands are located ____________________________________.
12. The tears drain out of ducts located ______________________________.
13. The pinna is the ____.
14. The middle ear contains three bones named the ________________, ________________ and ________________.
15. The ear drum is located in the ______________________________.
16. The two main parts of the inner ear are the _____________________ and the ________________.
17. Nerve endings telling us the position of our head are located in the ________.
18. All of the parts of the inner ear contain __________________________.
19. The middle ear is connected to the throat by the ____________________.
20. The brownish wax that lubricates the outer ear is called ________________.

LEARNING ACTIVITIES - continued

ACTIVITY #2. Eye and Ear Terminology Exercise

Directions: Look up the following words and write their definitions in the spaces provided. You may use Taber's Medical Dictionary or any other available reference.

1. Visual Acuity: ____________________
2. Astigmatism: ____________________
3. Andromimetic: ____________________
4. Hyperopia: ____________________
5. Labyrinth: ____________________
6. Lacrimation: ____________________
7. Legal Blindness: ____________________
8. Micropia: ____________________
9. Miotic: ____________________
10. Mydriatic: ____________________
11. Myopia: ____________________
12. Myringotomy: ____________________
13. Nystagmus: ____________________
14. o.d.: ____________________
15. o.s.: ____________________
16. o.u.: ____________________
17. Ophthalmologist: ____________________
18. Ophthalmoscope: ____________________
19. Optometrist: ____________________
20. Ptosis: ____________________
21. Refraction: ____________________
22. Slit Lamp: ____________________

LEARNING ACTIVITIES - continued

23. SQUINT: ______________________________
24. STRABISMUS: ______________________________
25. TONOMETRY: ______________________________
26. TUNING FORK: ______________________________

ACTIVITY #3. Refractive Problems of the Eye

Directions: Read the following.

The cornea, the aqueous humor, the lens and the vitreous body constitute the refractive media of the eye. Ocular refraction is the process by which rays of light are "bent" so that they focus on the retina. Normally, all the refractive media are transparent. Refractive errors are the most common type of eye disorder. These result when the refractive media (cornea, lens, aqueous and vitreous humors) are unable to bend light rays to converge on the retina. Many refractive errors have a tendency to be inherited. The patient with this type of condition may complain of eyestrain, nausea and headache.

Some types of refractive problems include:

1. Myopia (nearsightedness): Usually results from elongation of the eyeball. Because of the excessive length of the eyeball, light rays focus at a point in the vitreous humor before reaching the retina. As a result, distant vision will be blurred rather than clear.

2. Hyperopia (farsightedness): Results when the eyeball is shorter than normal, causing the light rays to focus at a theoretic point behind the retina. The individual will see distant objects clearly, but near vision will be blurred.

3. Astigmatism: Results from irregularity in the shape of the cornea or sometimes the lens. Vision is distorted. For example, a straight object may appear to be slanted to the patient. When the irregularity is severe, all light rays do not bend equally and the individual will suffer from eyestrain and blurred vision. Often a patient has both astigmatism and myopia or hyperopia. Astigmatism is corrected by cylindrical lenses.

4. Strabismus: The failure of both eyes to direct their gaze at the same object simultaneously. The visual axes are not parallel and diplopia (double vision) results. A wide variation in the manifestation of strabismus exists; there are lateral, vertical and mixed types. In monocular strabismus, one eye deviates while the other eye does not and in alternating strabismus, deviation alternates from one eye to the other. The term esotropia is used when one eye deviates toward the other eye; exotropia denotes a turning away from the other eye. Treatment may be medical or surgical or both. Some forms of strabismus can be corrected with glasses and exercises. When these corrective measures do not work and surgery is required, the family should know that more than one operation may be necessary to completely correct the condition.

LEARNING ACTIVITIES - continued

Some children with strabismus will close one eye to avoid seeing double, causing a condition of amblyopia (dimness of vision from disuse of the eye). The physician may order the better eye to be covered in order to force the child to use the deviating eye. The nurse should stimulate the child to use the unpatched eye for working puzzles, making drawings, sewing and similar activities.

An alternative to wearing eyeglasses to correct these problems is to use contact lenses. These tiny, almost completely invisible lenses fit over the eyeball. Contact lenses are expensive and considerable patience and effort is required to become accustomed to their use. Actually, they are foreign bodies and in the beginning, they cause irritation and discomfort. At first the patient wears them only for short periods. Gradually, the patient wears them for longer intervals. Most patients eventually can wear them all day without discomfort. However, not all patients who desire to wear contacts can or should wear them.

Some people, because of the shape of the eyeball, cannot be properly fitted and the lenses are a constant source of irritation. Many never get used to placing them in the eye. Common dangers that may result from wearing contacts are injury to or infection of the cornea.

ACTIVITY #4. Procedures for Eye Treatments

Directions: Read the following information.

Instillation of eye drops

1. Check the kind and the amount of drops ordered by the physician and check to see for which eye the drops have been ordered.
2. Check medication bottle to be sure that it is ophthalmic solution.
3. Ask the patient to tilt his/her head back and to the side and to roll the eyes back into his/her head. The patient should turn the head slightly to the right if the drops are placed in the right eye or to the left if the drops are placed in the left eye.
4. Gently pull down the skin beneath the eye to create a pocket into which you will place the drops. The conjunctiva is less sensitive than the cornea so the drops should not be placed directly onto the cornea.
5. Place one drop in the pocket of the conjunctiva. If any additional drops are placed there, they will just spill out of the eye. Blinking the eye spreads the medication.
6. Remember: Eye drops are sterile!! Never touch the dropper to the eyelid, eyelash or skin! An eye infection could result from dropper contamination.

Instillation of eye ointment

The same procedure is used as for eye drops. A single layer of ointment is squeezed from a tube and placed in the lower lid sac starting from the inner corner by the bridge of the nose to the outer corner of the eye.

LEARNING ACTIVITIES - continued

Eye Irrigations

An eye irrigation is used to cleanse the eye when the conjunctiva is infected or when it is necessary to remove secretions from the eye. Follow these procedures:

1. Protect the pillow with a plastic or waterproof sheet and towel.
2. Have the patient lie in the bed turned to the side on which the irrigation will be done. This keeps the contaminated fluid from running into the other eye and possibly causing an infection to the other eye.
3. Draw up the amount and the type of solution needed into a rubber-bulb syringe.
4. Holding open the eye with your thumb and your forefinger of one hand, direct a gentle stream of irrigating fluid along the conjunctiva and over the eyeball, from inner to outer canthus.
5. Avoid touching the eye!! The bottle tip is sterile.

Warm, moist compresses

Warm compresses relieve pain and promote healing. Follow these procedures:

1. Instruct the patient to lie flat on his/her back in bed.
2. Heat the ordered solution to 115°-120° F. Soak eye patches or cotton balls in this solution.
3. Remove the excess fluid from the patch or the cotton ball and place it on the eyelid.
4. Repeat this procedure every minute for 10 to 15 minutes using a new patch or cotton ball with the heated solution.
5. If the eyelids become irritated, petroleum jelly (Vaseline) may be placed on the lids before the compresses.

ACTIVITY #5. Review Exercise

Directions: Answer the following questions by filling in the blanks.

1. Another name for myopia is ____________________.
2. Hyperopia is also called ________________________.
3. Double-vision is a result of ________________________________ .
4. Elongated eyeballs can cause ______________________________ .

LEARNING ACTIVITIES - continued

5. To properly instill eye drops, the patient should have his/her head ____________
   ____

6. A pocket for the eye drop is made by ______________________________.

7. You should never touch the eye dropper to the eyelid because ____________
   ____

8. When you apply eye ointment, you should start at the ____________________ and move to ____________________.

9. The purposes of eye irrigations are to ____________________ and ____________________.

10. Moist compresses to the eye should be very ____________________ and ____________________.

11. You can protect the eyelid when you apply compresses by ____________________
    ____.

12. The purposes of warm compresses are to ____________________ and to ____________________.

ACTIVITY #6. Injuries to the Eye

Directions: Read the following information.

Foreign Bodies

If dust, an eyelash, a gnat or any foreign body gets underneath the eyelid, do not rub the eye. NEVER rub the eye! If the particle has been in the eye for a period of time or appears to be imbedded in the cornea, do not try to remove it since you could damage the cornea.

If an insect should get into your patient's eye, you should:

1. Pull down the lower lid and examine the inner surface of the eye. Be gentle. If nothing is found, then:

2. Pull the upper lid over the lower lid and see if the tearing will wash the particle out from underneath the upper lid. If nothing is found, then call an R.N. or the physician. He/she may continue with the following procedure. Use the stem of a q-tip over the upper lid and pull the eyelashes over the stem allowing the upper side of the upper lid to be folded over the q-tip and the underside of the lid to be exposed.

3. When the particle is finally found, a moistened cotton tip is placed on the particle so that it will stick to the cotton and can be removed. Be careful because it is very easy to scratch or otherwise damage the eye.

LEARNING ACTIVITIES - continued

Chemicals

Any chemical (hair spray, permanent solution, etc.) that gets into the eye may potentially cause a burn. If a chemical does enter the eye, hold the eyelids apart and wash out the eye with lukewarm tap water that runs from the center of the eye to the outside. If possible, place the victim's head under a faucet and wash out the eye for 15 to 20 minutes. Also, call a physician immediately.

Wounds

Minor cuts to the eyelid can be cleansed with water the same way as cuts on the body are; however, most cuts to the eyelid should be seen by the physician in case the eye is damaged. Wounds to the eye itself should be seen by a physician immediately! Keep the victim quiet and cover the eye with a sterile pad or a clean cloth, if possible.

ACTIVITY #7. Infections and Inflammation of the Eye

Directions: Read the following.

Conjunctivitis and Blepharitis

Conjunctivitis (pinkeye) is an inflammation to the lining of the eyelid. Blepharitis is the inflammation of the eyelid. Both of these diseases may be caused by sunburn, a chemical or by using a face towel or makeup of someone who already has the infection. Symptoms are redness, pain, swelling and tearing. The discharge may be either watery from excessive tearing or purulent if the infection is severe. They are highly contagious inflammations.

The physician's orders may include:

1. Antibiotics.
2. Warm, moist compresses.
3. Saline irrigations.

Prevention

Cleanliness!! Keep your towels to yourself. Keep hands to yourself, too. If you have an eye infection, be careful that it does not spread to the other eye.

Styes (hordeola)

A sty is an infection of a sebaceous gland or hair follicle on the eyelid. For some unknown reason, people who use their eyes a great deal or who need eyeglasses and do not use them are more apt to get styes than the general population. Also, people who are rundown, malnourished and susceptible to infections may develop a sty.

The area at the edge of the eyelid becomes swollen, red and painful. Leave it alone!! Do not squeeze it!! It may spread or get worse.

LEARNING ACTIVITIES - continued

The physician's orders may include:

1. Warm, moist compresses.
2. Incision and drainage (I&D) of the area done by a physician.
3. Antibiotics.

Keratitis and Corneal Ulcer

Keratitis is inflammation of the cornea. It may be caused by a scratch on the cornea that becomes infected or from stress. If not cared for, it could become an ulcer. Corneal ulcer is the destruction of corneal tissue. Sometimes people with low-resistance to infections develop ulcers. The ulcers should not be treated lightly. Any scarring or clouding of the cornea could cause blindness. Therefore, if the eye is painful, sensitive to light, red (bloodshot), tearing, and if there are spasms of the eyelid or muscles of the eye, see a physician.

Treatment for both keratitis and corneal ulcer include:

1. Protective drugs.
2. Antibiotic drops.
3. Atropine eye drops (to relax the iris and relieve the pain).
4. Hot compresses.
5. Patching.

Uveitis

Uveitis is the inflammation of the iris, ciliary body and choroid.

The uvea is the second or vascular coat of the eye containing the iris, the ciliary body and the choroid. An infection of the uvea is usually caused by bacteria in the bloodstream (systemic). Why it settles in the uvea is not known, but we do know that it is dangerous. Any infection of the eye causes pain, headache, redness, swelling and lacrimation. When the uvea is affected, complications such as glaucoma (due to atrophy of the iris and accumulation of secretions in posterior chamber), cataracts (caused by adhesions) and loss of vision may occur.

Treatment for uveitis includes:

1. Atropine eye drops to rest the iris.
2. Moist, warm compresses.
3. Medication for pain.

LEARNING ACTIVITIES - continued

4. Patches on both eyes until the severe symptoms have disappeared.

5. Dark glasses to protect the eye and to decrease the pain when in the light.

ACTIVITY #8. Glaucoma

Directions: Read the following material.

In the normal eye, the aqueous is produced by specialized cells in the ciliary body. The ciliary body is a circular muscle that produces aqueous and is responsible for the accommodation of the lens of the eye. The normal flow of the aqueous is from the posterior chamber, through the pupil and into the anterior chamber. The flow continues out the angle of the iris, through the trabecular meshwork, into Schlemm's canal, then into the venous system. Study the picture of the eye on the next page.

Glaucoma is an acute or chronic condition characterized by an increase in intraocular pressure. The aqueous fluid behind the cornea flows through a canal in the cornea where it meets the iris. If the iris becomes dislodged or swollen, the fluid cannot drain out of the anterior chamber and pressure builds up.

The displacement of the iris may result from physical causes such as hormonal imbalance or heredity. No matter what the cause, it can be an emergency situation. If the person with acute glaucoma does not seek help within 24 to 36 hours after the blockage occurs, permanent loss of vision may occur.

The victim usually does seek help because the pain is so severe it cannot be tolerated. The pain may make the victim nauseated and cause vomiting. Other symptoms include blurred vision and dilated pupils.

Treatment

There are two means of treatment for a patient with glaucoma. Depending upon the severity of the disease, one or both methods may be used. The treatments are:

1. Medical: Eye drops that cause the pupil to constrict (a miotic agent) also cause the iris to stretch, thus pulling it away from the cornea. This opens the canal allowing for the flow of aqueous fluid out of the anterior chamber.

2. Surgical: The most common surgical technique is an iridectomy. With this surgery, a portion of the iris is removed, leaving the canal open.

Nursing Care

Nursing care of a patient after an iridectomy consists of keeping the patient flat on his/her back for 24 hours and relieving the pain with medications.

LEARNING ACTIVITIES - continued

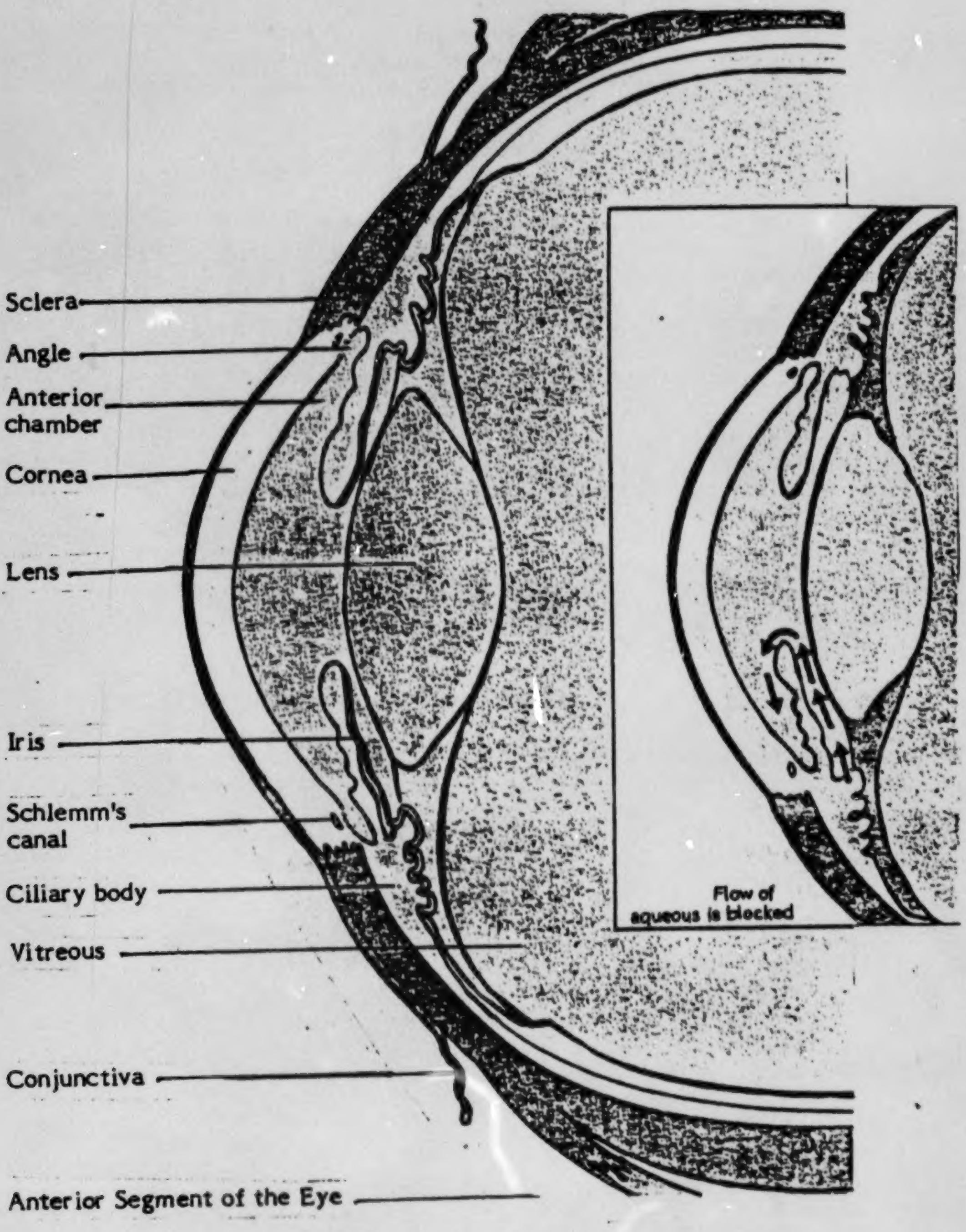

Sclera
Angle
Anterior chamber
Cornea
Lens
Iris
Schlemm's canal
Ciliary body
Vitreous
Conjunctiva
Anterior Segment of the Eye
Flow of aqueous is blocked

Diagram of Eye Showing Glaucoma

LEARNING ACTIVITIES - continued

A patient with glaucoma must be under medical care and use medications for the rest of his/her life. Glaucoma cannot be cured, only kept under control. The patient must take eye drops daily and must have regular checkups with the physician. Although this may be difficult to accept, if not accepted, the patient will have another severe attack and eventually blindness will occur.

A way to help prevent chronic glaucoma is to have the ocular pressure checked yearly, especially for individuals over 35 years of age or if there is history of glaucoma in the family. The early detection of glaucoma could prevent blindness.

The machine that measures the ocular pressure is called a tonometer. The test is painless and takes only minutes. It is worthwhile to have it done.

ACTIVITY #9. Cataracts and Cataract Extraction

Directions: Read the following information.

A cataract results from a change in the lens of the eye causing it to become cloudy and opaque. This change is caused by a congenital defect (e.g. mother had German measles), a disease (e.g. iritis or diabetes) or as a result of aging. Therefore, anyone from a baby to an eighty-year-old man or woman can get cataracts. Cataracts are not cancerous.

Since light has to pass through the lens to hit the retina, a clouding of the lens causes the vision to be blurry. A halo will appear around objects and bright lights will be annoying. Eventually, the person will not be able to see out of the affected eye.

Surgery for cataract extraction is the only means of improving vision. During surgery, the whole lens of the eye is removed. If both eyes need cataracts extracted, they are usually done at different times. First one is extracted and then the postop behavior of the patient is reviewed. If the patient does not scratch his/her eyes, pull off the eye patch or become too disoriented; the other eye may be operated on within a few days.

The cataract extraction is performed under a local anesthetic but the patient does receive a small sedative or analgesic before going to the operating room. The operation lasts about one hour and the patient is returned to the room on the unit. The postop care detailed here is for a cataract extraction only. You must remember, however, that most of these patients are older (70-85) people and may have other medical problems such as diabetes, CHF, arteriosclerosis or hypertension. Take care of the total patient at all times.

Physician's orders

Immediately postop, the physician may be concerned with the possibility of increased pressure on the sutures. To help prevent this, the physician may order:

1. Bedrest with head elevated 30 to 45 degrees for 6 to 8 hours or until after the first postop day.
2. Sedatives, TID or PRN.
3. Application of eye shield on operative eye and a cotton patch on the other eye.

LEARNING ACTIVITIES - continued

4. The patient to lie on his/her back or on the side not operated on.
5. The patient to avoid sneezing, coughing, straining with stools or stooping.
6. The patient to use slip-on style slippers.

A sudden sharp pain or a feeling of pressure in the operative eye may indicate hemorrhaging at the suture line. The physician should be notified immediately. An itching feeling, on the other hand, is only a sign that the suture line is healing.

The patient will be able to eat immediately following surgery, but will need assistance since the eyes are patched. The patient should be treated as if he/she were blind until the patches are removed.

Frequently the patient is ambulatory the first day postop. The eye shield is removed for the day but replaced at night tc keep the patient from accidentally scratching or rubbing the operative eye. The patient will be fitted with eyeglasses six to eight weeks postop. Now, more and more people are wearing contact lens after cataract surgery instead of the usual thick, thick glasses!

Since the patient may have difficulty adjusting to the new sight limitations, the nurse must help the patient to become oriented to all surroundings. Perception of distance may be confusing until the patient becomes oriented. The purpose of the lens is to help the patient judge distances. At first the patient may tip over the juice glass on the breakfast tray because it may seem to be farther back than it really is. The patient may reach for the water glass but be unable to grasp it because of the inability to judge where it is. The patient may have difficulty finding the center of the chair to sit on. Eventually, the patient becomes acclimated. The eyeglasses will help, but until acclimated the patient will need basic help in directing any actions to an object.

In summary, postop care includes:

1. Preventing increased pressure on the suture line.
2. Observing for hemorrhage.
3. Helping the patient to become oriented to surroundings.
4. Helping to prevent complications.

ACTIVITY #10. Corneal Transplant

Directions: Read the following material.

Corneal transplant (keratoplasty): When scarring of the cornea results in serious impairment of vision, sight often can be restored by the transplant of a portion of a normal cornea to the eye of a patient whose cornea has become scarred. The corneal graft is taken from a donor's eye that, ideally, has been removed from the donor within six hours of death. Corneas can now be frozen and used at a later date, but the demand for them is so great that they are frequently used within 24 hours after being removed from the donor.

LEARNING ACTIVITIES - continued

Partial or total thickness grafts or a combination of the two may be performed. A graft may be performed more than once if necessary. The operation cannot be performed if an infection is suspected.

Postop care of a patient who had a corneal transplant includes:

1. Moving the patient from the stretcher to the bed in one swift horizontal lift.
2. Keeping the patient flat in bed for 24 to 48 hours.
3. Limited exertion after becoming ambulatory:
    a. No stooping.
    b. No running.
    c. No climbing stairs.
    d. No sneezing.
    e. No sudden moves.
4. Keeping both eyes patched at first.
5. Placing a protective eye shield on the patient at night to prevent the patient from rubbing or scratching the eye.

Many corneal transplants are rejected during the first year postop.

ACTIVITY #11. Retinal Detachment

Directions: Read the following information.

When the retina of the eye develops a hole or a tear and vitreous fluid collects between the retina and the choroid, the patient is said to have a detached retina. The tear may be due to sudden head trauma, degeneration of the retina or a tumor.

Symptoms

Blindness occurs only at the spot where the retina is detached. The patient may experience floating spots, spiderwebbing or "road maps" caused by blood clots if there was bleeding at the site. After a time, the person may feel as though a veil were hanging over his/her eye as vision becomes cloudy.

Treatment

Immediate treatment is hospitalization and complete bedrest with both eyes patched. If the tear is on the right side of the eye, the patient should lie on his/her back with the head turned to the right. If it is on the left side of either eye, the patient should lie on his/her back with the head turned to the left. This prevents gravity from pulling on the retina and causing further detachment. Since both eyes are covered, everything from bathing to feeding will be done by others. Sedatives may also be given to help the patient to remain flat and calm.

Surgery consists of creating an inflammatory condition between the retina and the choroid causing them to be sealed together by a scar as the condition heals. This is accomplished by removing the fluid between the two tissues, introducing intense heat (lazer beam), intense cold to the area, or by scratching the retina with a probe. The adhesions that form should hold the retina and choroid together.

Postop, the patient will again have both eyes patched to minimize eye movement and will remain flat in bed for several days. This means that the patient will require total physical and emotional care to keep from becoming restless. When the patient has eye patches on both eyes, it is necessary to keep both siderails up and place the call light in the patient's hand or where it can easily be reached.

ACTIVITY #12. Eye Enucleation

Directions: Read the following.

The removal of the eyeball is called eye enucleation. There are basically four reasons why this type of surgery may be necessary. They are:

1. Because of a malignant tumor.
2. If the eye is infected and it is feared that the infection may spread to the other eye.
3. To relieve the patient of severe pain in an eye that is already blind.
4. If the eye is blind and malfomed from disease or trauma.

When the eye is removed, the muscles controlling its action are cut as close to the eyeball as possible and attached to a fold, teflon or plastic socket. The socket provides a holder for the artificial eye that can be worn starting about one month after surgery. If the muscles are attached to the prosthesis, the artificial eye will move similarly to the patient's real eye, providing a more normal appearance.

Two major complications after an enucleation are infection and hemorrhage. Therefore, drainage should be checked frequently for signs of bleeding; complaints of severe pressure or pain should be reported to the physician. To help decrease the chance of any complications, a pressure dressing is applied during surgery and antibiotics are routinely ordered.

LEARNING ACTIVITIES - continued

ACTIVITY #13. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. List the four steps used to examine and remove an eyelash from a person's eye.

   a. ____________________

   b. ____________________

   c. ____________________

   d. ____________________

2. You would not try to remove the eyelash if ____________________ or ____________________.

3. If you accidentally sprayed window cleaner in your eye, you would:

   ____

4. Another name for pinkeye is ____________________.

5. Treatment for conjunctivitis includes:

   a. ____________________

   b. ____________________

   c. ____________________

6. A sty is a(n) ____________________.

7. The one thing that you should never do to a sty is ____________________.

8. A corneal ulcer is caused by ____________________.

9. The parts of the uvea are the ____________ and ____________.

10. Complications of uveitis include: ____________________

    ____

11. Glaucoma is caused by ____________________.

12. Medical treatment for glaucoma consists of ____________________.

13. Iridectomy may be performed to ____________________.

LEARNING ACTIVITIES - continued

14. Nothing can cure glaucoma. TRUE FALSE

15. A cloudy lens is called a(n) ____________________.

16. Symptoms of a cloudy lens include:

    a. ____________________

    b. ____________________

    c. ____________________

17. Signs of hemorrhage after a cataract extraction include ____________________ ____________________ and ____________________.

18. For a few hours after eye surgery, the patient's activity will include ____________________ ____________________

19. An eye shield is worn at night to prevent the patient from ____________________ ____________________

20. One of the hardest things for a patient to adjust to after cataract surgery is ____________________

21. A corneal transplant is performed when ____________________ ____________________

22. Intraocular pressure is increased when the patient:

    a. ____________________

    b. ____________________

    c. ____________________

    d. ____________________

    e. ____________________

23. Symptoms of retinal detachment include:

    a. ____________________

    b. ____________________

    c. ____________________

LEARNING ACTIVITIES - continued

24. The patient with retinal detachment must wear a patch on _____________ .

25. Eye enucleation means ______________________________________ .

26. The eye muscles are attached to the artificial eye. TRUE FALSE

27. This surgery may be performed for cosmetic reasons. TRUE FALSE

28. The two major complications of an eye enucleation are:

   a. ______________________________________

   b. ______________________________________

ACTIVITY #14. Procedures for Ear Treatments

Directions: Read the following.

Instillation of Ear Drops

Ear drops may be ordered to soften ear wax or to instill an antibiotic solution into the ear canal. The drops should always be kept at room temperature to prevent vertigo after they have been instilled.

Below are the procedures to follow for instilling the medication.

1. Have the patient lie in bed on his/her side so that the affected ear is uppermost.
2. Gently lift the auricle upward and backward to straighten the ear canal.
3. Instill the prescribed number of drops into the ear. Make sure that you instill the drops into the ear canal and not into the pinna.
4. Ask the patient to remain on his/her side for at least five minutes to insure that the medication reaches all of the ear canal.

Ear Irrigations*

Ear irrigations are ordered to promote drainage or to remove dried cerumen from an ear infection. Again, the solution should be kept at room temperature.

Follow these procedures for ear irrigations:

1. Have the patient sit down with his/her head tilted to the side of the ear that is to be irrigated. Have the patient hold a kidney basin under the ear to catch the drainage.

---

*In many hospitals, ear irrigations are not nursing procedures but you may need to assist the physician. In a clinic, you may do the irrigation.

LEARNING ACTIVITIES - continued

2. Gently pull the auricle upward and backward to straighten the ear canal.

3. Hold the tip of the syringe so that the irrigation solution flows toward the roof of the ear canal. This will enable the fluid to drain out.

4. After all of the solution has been instilled, ask the patient to lie on the affected side for five to ten minutes to insure that all the solution drains out of the ear.

ACTIVITY #15. Infectious Ear Diseases

Directions: Read the following material.

Purulent Otitis Media

This is an infection of the middle ear caused by infectious organisms entering the middle ear through the eustachian tube from the nasopharynx. Blowing your nose too forcefully, careless use of nose drops or nasal sprays and a complication of a cold or a sore throat can cause this infection.

Symptoms

1. Purulent discharge draining from the ear.

2. A full feeling (such as congestion) in the ear.

3. Throbbing pain.

4. Tinnitus (ringing in the ears).

5. Fever.

The physician's orders may include:

1. Antibiotics started immediately.

2. Instillation of warm ear drops.

3. Medication to relieve pain and decrease temperature.

4. Myringotomy (an incision into the tympanic membrane) may be performed to drain fluid from behind the ear drum.

Labyrinthitis

This infection affects the inner ear and usually results from the spread of a middle-ear infection. Remember that the inner ear helps with equilibrium.

Symptoms

1. Dizziness.

LEARNING ACTIVITIES - continued

2. Nausea and vomiting.
3. Disturbed hearing.

The physician's orders and nursing care may include:

1. Massive doses of antibiotics.
2. Remain in bed until the dizziness subsides.
3. Siderails up.
4. Restrict fluids until nausea stops.

Mastoiditis

Mastoiditis is a complication of otitis media that spreads to the mucous lining of the mastoid process (a bone in the skull).

Symptoms

1. Pain.
2. Fever.
3. Profuse discharge from the ear.

The physician's orders may include:

1. Antibiotics.
2. Ear drops.
3. Medication for relief of pain.
4. Decrease temperature.

If the symptoms persist or the temperature continues to rise, surgery is performed. A simple mastoidectomy is performed by making an incision in front of or behind the ear and removing the necrotic (dead) mastoid cells. This surgery does not alter the hearing in the affected ear.

In a radical mastoidectomy, the complete mastoid process, ear drum, malleus and incus are removed. After this surgery, the patient may have to wear a hearing aid. Consult your text about the function of a hearing aide.

Postop care for either surgery includes:

1. Observe the bulky dressing for drainage. You may reinforce the dressing if necessary, but usually the physician will change the dressing.

LEARNING ACTIVITIES - continued

2. Observe the patient for any signs of facial paralysis. The facial nerve is near the ear and may be damaged during surgery. Cortisone treatment will usually restore the nerve function.

3. Observe for a drooping of the mouth, the inability to whistle or the inability to smile, all are indications of nerve damage.

ACTIVITY #16. Ménière's Syndrome

Directions: Read the following.

Meniere's syndrome is caused by an increase in the production of fluid in the inner ear and an edematous condition at the labyrinth. The pressure in the cochlea is increased and eventually there is deafness in the ear.

Symptoms

The primary symptom of this disease is attacks of vertigo, which may become so severe that the person cannot take a few steps without falling over.

Other symptoms are:

2. Nausea and vomiting.
3. Dizziness.
4. Headache.
5. Irritability.

The physician's orders to reduce the fluid may include:

1. Diuretics (Diuril).
2. Decrease fluid intake.
3. Sodium restrictions, if necessary.
4. Vasodilating drugs so that the blood vessels absorb more fluids.
5. Medication to relieve nausea.

If these conservative treatments fail, the labyrinth will have to be removed. Although the patient then will not be able to hear from that ear, all the severe handicapping symptoms of the disease will be eliminated.

The onset of Meniere's syndrome is frequently sudden. On the following page is a sample of a nursing care plan that would be effective during a severe attack.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Dizziness	Prevent sudden motions. Provide complete bedrest.	Sudden motions increase the pressure in the inner ear, therefore, increase dizziness.
	Turn patient slowly. Do not bump the bed. Stand in front of the patient while talking. Reduce noise level.	Patient will probably instinctively turn toward noise and become dizzy from the fast movement.
Safety measures	Keep siderails up when patient is in bed. Always accompany the patient when he/she is ambulatory. Encourage the patient to walk slowly.	

ACTIVITY #17. Otosclerosis and Stapedectomy

Directions: Read the following material.

Otosclerosis is the formation of an abnormal spongy bone around the stapes so that it cannot vibrate properly. The cause is unknown, but it occurs most frequently in women. It is not hereditary. There is no actual pain involved with this disease, just a slow loss of hearing accompanied by a buzzing or a ringing in the ear.

The stapes can be removed and replaced by a prosthesis made of plastic, steel or teflon with gelfoam over the oval window. It will take several weeks before the physician can judge the amount of hearing the patient has in that ear.

Postop nursing care consists mostly of:

1. Observing for fever, pain or any other signs of an infection.

2. Observing for vertigo and making sure that the patient does not fall while ambulating.

3. Reinforcing the physician's orders. The patient must not:

   a. Blow his/her nose for one week (to prevent air and bacteria from being forced into the eustachian tube).

LEARNING ACTIVITIES - continued

b. Sneeze without keeping his/her mouth open to equalize the pressure in the ear.

c. Get water in the ear for six weeks.

Many patients are very discouraged because they cannot hear better immediately. Reassure them that an improvement should come with time.

ACTIVITY #18. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. To have the ear drops properly instilled, the patient should be positioned ______

   ____

2. To instill ear drops, lift the auricle __________ and __________.

3. After the drops are instilled, the patient should ____________________

   ____

4. An ear irrigation may be ordered to ____________________

   ____

5. After the irrigation, the patient should lie on his/her ______________ side.

6. Otitis media is an inflammation of the ____________________

7. Treatment for otitis media includes:

   a. ____

   b. ____

   c. ____

8. Symptoms of mastoiditis include:

   a. ____

   b. ____

   c. ____

9. After a simple mastoidectomy, the patient can still hear out of the affected ear.
   TRUE FALSE

LEARNING ACTIVITIES - continued

10. Postop care of a patient having a mastoidectomy includes observing for:

    a. ______________________________

    b. ______________________________

11. Things to observe while checking for facial paralysis are:

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

12. The main symptom of labyrinthitis is ______________________________ .

13. You would keep the patient with labyrinthitis on bedrest because ____________

    ____

14. Ménière's syndrome affects the ______________________________ .

15. Vertigo is the main symptom of Meniere's syndrome because ____________

    ____

16. You should stand directly in front of the patient with Meniere's syndrome because ______________________________

    ____

17. Ways to protect a dizzy patient from falling include:

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

18. Treatment for otosclerosis is ______________________________ .

LEARNING ACTIVITIES - continued

19. Patient restictions after a stapedectomy are:

a. ______________________________

b. ______________________________

c. ______________________________

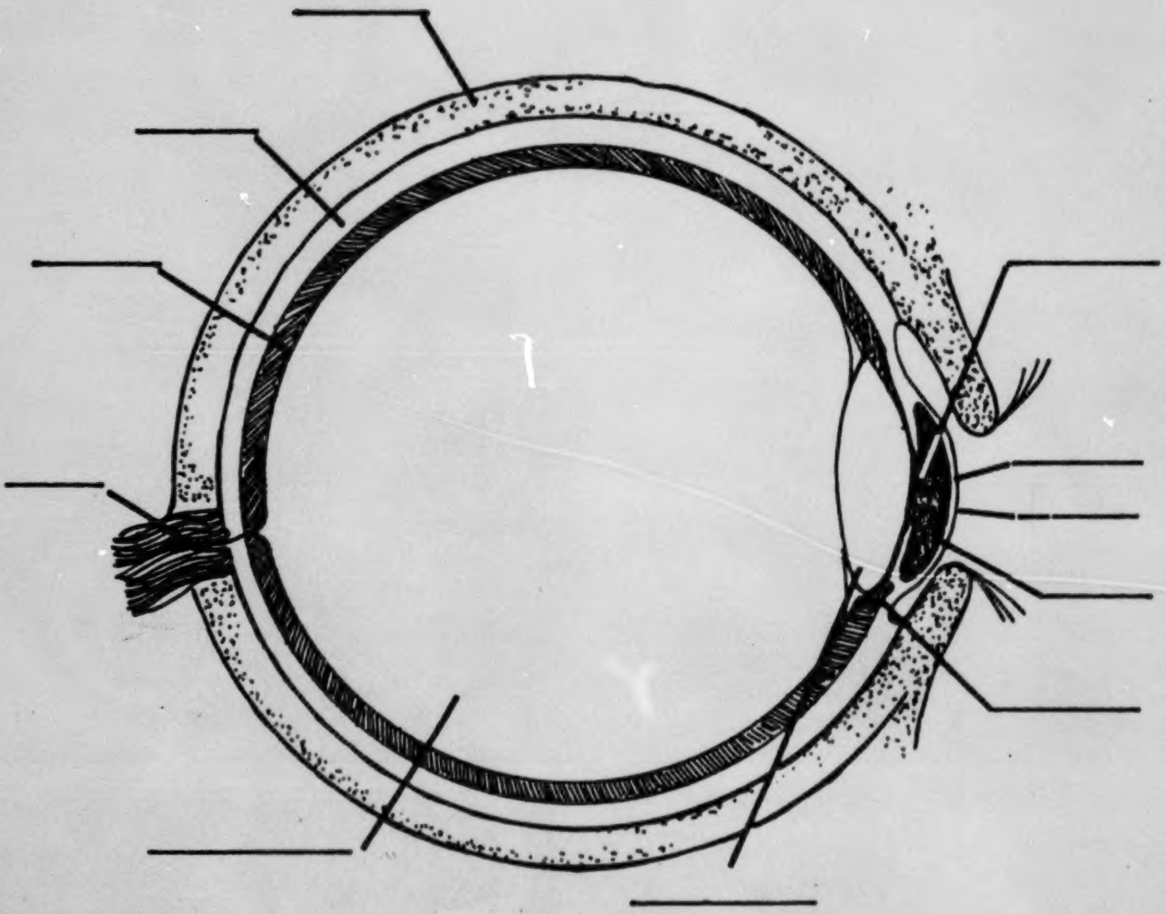
20. A stapedectomy is emotionally stressful to the patient because ______________

____

21. The function of the eye is to ______________________________ .

22. Label each part of the eye in the diagram below.

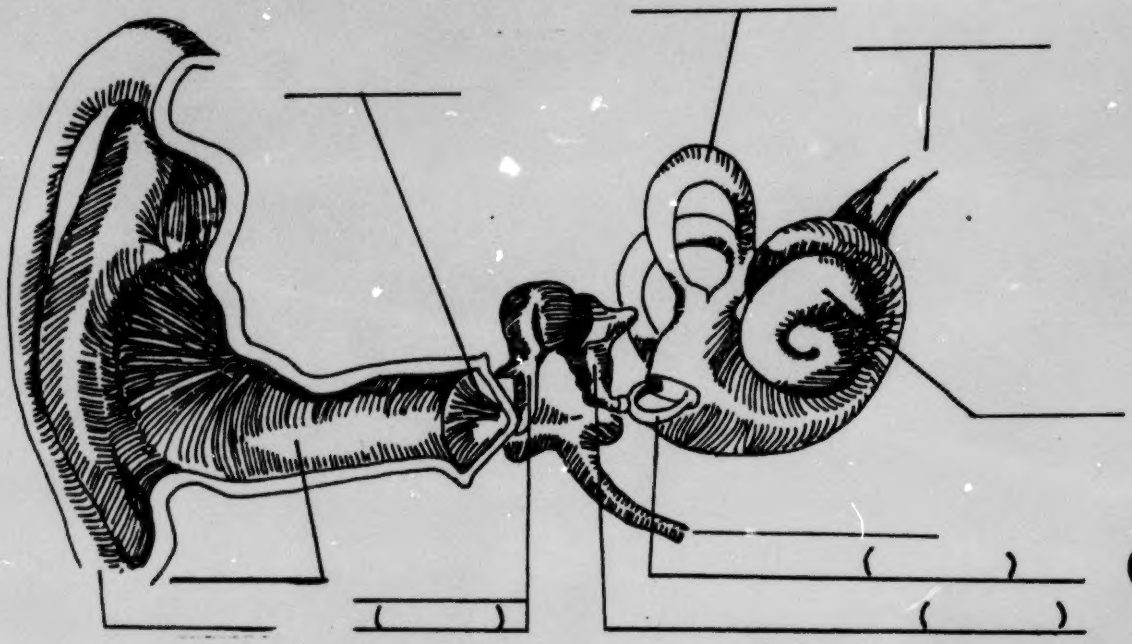
THE EYE



LEARNING ACTIVITIES - continued

23. Label each part of the ear in the diagram below.

EAR



24. In the diagram above, the structures labeled D, E, and G make up which part of the ear?

25. The eustachian tube connects the ______________ and the ______________.

ACTIVITY #19. Clinical Assignment

Directions: Read the following objectives that are specific to the care of a patient with eye or ear conditions. You are responsible for these, as well as the general clinical objectives, when assigned to such a patient.

Specific Clinical Objectives

To the instructor's satisfaction, you will:

1. Provide nursing care to alliviate:
   a. Pain.
   b. Fear.
2. Demonstrate nursing procedures for diagnostic tests for your assigned patients and determine if test results are within normal range. Include:
   a. Physical examination (ophthalmoscope).

LEARNING ACTIVITIES - concluded

b. Eye Tests
    (1) visual acuity
    (2) tonometry
    (3) slit lamp

c. Hearing tests
    (1) voice
    (2) audiometer
    (3) tuning forks

3. Demonstrate nursing care of patients with therapy specifically related to sense organs (eye and ear):

    a. Irrigations
    b. Instillation of drops
    c. Special preop and postop care, including teaching the patient and the family.

NURSING CARE OF ADULTS

Module J - Nursing Care for Patients with Cancer

RATIONALE

To give safe, effective nursing care to a patient with cancer, you must know the physiological changes that occur, the signs and the symptoms to be observed and the treatment to be used.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity #14 when given a clinical assignment of caring for a patient with cancer.
2. Identify physiological changes that occur with the development of cancerous diseases.
3. Identify common symptoms of cancerous diseases.
4. Identify differences between benign and malignant neoplasms.
5. Identify common procedures used to diagnose cancer and the therapy used to treat cancer.
6. Verbally describe or name the nursing action, patient symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with cancer.
7. Discuss the emotional impact of cancer on the patient and the family.

LEARNING ACTIVITIES

Directions: The information you need to complete Module J is included in this module and in the reading assignments from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms relating to cancer. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material in this module. There are many cancerous diseases, however the ones discussed in this module are the ones most commonly found in hospitalized patients. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to Cancer

Directions: Read and study Chapter 8, "Nursing the Patient with Cancer," then read the following information.

A tumor, also called a neoplasm, is a new growth of tissue that forms an abnormal mass having no physiological function. Since all tumor cells originate from normal tissue cells, neoplasms are named by the tissue affected, called the parent tissue. The suffix for tumor is "oma."

There are two types of neoplasms - benign and malignant. Classifications of benign neoplasms are as follows:

1. Adenoma: tumor in a gland; "adeno" means gland.
2. Angioma: tumor composed of a network of blood vessels; "angi" means vessel.
3. Chondroma: tumor growth on cartilage tissue; "chondri" means cartilage.
4. Fibroma: tumor composed of fibrous connective tissue.
5. Pipoma: tumor of fatty tissue; "pip" means fat.
6. Myoma: tumor in muscle tissue; "myo" means muscle.
7. Nevus: darkly pigmented skin tumor such as a mole.
8. Osteoma: tumor of the bone; "oste" means bone.
9. Papilloma: nonpigmented tumor of epithelial tissue such as a wart.

Malignant neoplasms are referred to as cancerous. Although cancer cannot really be thought of as a single disease, cancerous neoplasms do have one general characteristic, the multiplication of diseased cells that, if uncontrolled, invade normal tissue eventually replacing that tissue and causing death. Cancer is second only to cardiovascular disease as a cause of death in the United States.

There are two main types of cancer:

Carcinoma is a form of malignancy that originates in epithelial tissue. Epithelial tissue is tissue that forms the outer surface of the skin, lines the body cavities such as the gastrointestinal tract or the genitourinary tract, and is found in glandular tissue such as the breasts and in organs such as the liver or the spleen. Carcinoma is the most common form of cancer.

Sarcoma is a cancer that develops in connective tissue such as muscles, nerves, bones, fat or cartilage.

LEARNING ACTIVITIES - continued

Classifications of malignant neoplasms may include:

1. Adenocarcinoma - cancer in a gland.
2. Angiosarcoma - cancer in the blood vessels.
3. Chondrosarcoma - cancer in the cartilage tissue.
4. Fibrosarcoma - cancer in fibrous connective tissue.
5. Piposarcoma - cancer in fatty tissue.
6. Myosarcoma - cancer in muscle tissue.
7. Malignant melanoma - darkly pigmented skin cancer.
8. Osteosarcoma - cancer in the bone.
9. Squamous cell carcinoma - nonpigmented or lightly pigmented cancer of the epithelial tissue.
10. Lymphoma - cancer (or tumor) of the lymphatic system (e.g. Hodgkin's disease).

Now study the difference between benign and malignant neoplasms in the following chart.

BENIGN	MALIGNANT
Composed of mature tissue cells; usually growing slowly in an orderly manner.	Composed of many immature cells, usually growing rapidly and disorderly.
Tumor cells are very much like parent tissue cells.	Tumor cells have undergone different degrees of change. The loss of likeness to the original cell is useful in determining the degree of malignancy: Grade I tumor is most like the parent tissue and is least malignant; Grade IV is very unlike the parent tissue and is most malignant.

LEARNING ACTIVITIES - continued

BENIGN	MALIGNANT
Enclosed within a capsule so that the tumor does not invade surrounding tissue; remains localized and does not enter the bloodstream.	Not encapsulated and easily spread in one of four ways: (a) invasion - fingerlike projections that branch into surrounding tissue; the word cancer means "crab" named because of its "legs." (b) metastasis - individual tumor cells are carried throughout the body in the bloodstream or lymphatic system; the new tumor that develops is called a metastatic growth. (c) implantation - an embolus of a clump of cancer cells is carried to surrounding tissue and organs usually within close proximity of the original tumor by the bloodstream or lymphatic system. (d) diffusion - seeding within a body cavity.
Causes harm only by creating pressure on surrounding tissue and organs.	Continued rapid growth results in the loss of weight and strength. Most cancerous tumors are vascular and bleed easily, producing anemia. The disease frequently ends in death.
Usually do not recur after removal.	Tend to recur after treatment.
Rarely fatal	Fatal without treatment.

LEARNING ACTIVITIES - continued

Cancers's Seven Warning Signs

Now thousands of people are saved every year because cancer is found and treated earlier than ever before. An important part of cancer prevention or early detection is awareness. The individual must practice basic safeguards and be alert to the danger signals. The American Cancer Society has provided the following lists of safeguards against cancer and signs of cancer:

Change in bowel or bladder habits.

A sore that does not heal.

Unusual bleeding or discharge.

Thickening or lump in the breast or any other body area.

Indigestion or difficulty swallowing.

Obvious change in a wart or a mole.

Nagging cough or hoarseness.

Note: Pain is not a sign until late in the disease.

Seven Safeguards Against Cancer

Breast: Self-examination of the breasts monthly (5 days post-menses).

Colon - Rectum: Yearly proctoscopic examination for all people over 40.

Lung: Annual chest x-ray. If you do not smoke cigarettes, do not start; if you do smoke, STOP.

Oral: Yearly examination of the mouth and the teeth.

Skin: Avoid unnecessary overexposure to sunlight, especially persons with fair complexions.

Uterus: Yearly pelvic examination with a papanicolaou (PAP) exfoliative cytology smear for all female adults.

Basic: Annual complete physical examination for all adults.

LEARNING ACTIVITIES - continued

Most Frequent Sites of Malignant Neoplasms

Incidence in Women	
Skin	2%
Oral	2%
*Breast	27%
Lung	8%
Colon and rectum	15%
Pancreas	3%
Ovary	4%
Uterus	13%
Urinary	4%
Leukemia and lymphomas	7%
All other	15%

Mouth and pharynx
Thyroid
Lung
Breast
Skin
Uterus
Prostate
Rectum

Incidence in Men	
2%	Skin
5%	Oral
22%	Lung*
14%	Colon and rectum
3%	Pancreas
17%	Prostate
10%	Urinary
8%	Leukemia and lymphomas
19%	All other

*Most frequent sites of cancer in male and female.

ACTIVITY #2. Diagnostic Procedures

Directions: Read the following.

Secretions from the cervix secured during a pelvic examination are sent to a laboratory and the results are sent to the physician. The appearance of the cells under the microscope is graded into five classes:

Class I	Normal
Class II	Abnormal; may indicate infection
Class III	Suspiciously malignant
Class IV	Probably malignant
Class V	Malignant

If cancer cells are found, a biopsy is always done.

LEARNING ACTIVITIES - continued

Biopsy: Whenever possible, a biopsy of a tumor or lump is performed and the cells are studied microscopically to diagnose the type of lesion. If no definite tumor is felt (or no question of whether there is a tumor or not - as in the brain), a scan may be performed to establish the presence or absence of a space-occupying lesion.

Scan: A scan is performed in the nuclear medicine department of a hospital. Usually no preparation is required of the patient. A specific radioactive isotope is injected (or swallowed) and in a given amount of time (two hours to two days depending on the test being conducted), the patient is positioned under a scintillator and the amount of radioactivity measured. The most common scans are: liver scan, bone scan, brain scan and gallium scan (for lymphomas). The patient should be informed that the procedure is entirely painless and that the radioactive substance decomposes rapidly and is excreted. The patient lies or sits while the scintillator passes back and forth above the body giving off a continual "clicking" sound. This is normal. There is no "feeling" during the test, no aftereffects, no complications. The patient may resume normal activity.

Blood Tests: As you have already learned, an elevated serum acid phosphatase is indicative of metastasizing prostatic carcinoma. An increase of the serum alkaline phosphatase is a sign of increased osteoblastic activity and may be bone sarcoma or metastases.

X-rays: Any x-ray picture of a body part that shows abnormality or an x-ray study of an abnormal organ function would be evaluated further to determine the cause of the abnormality. A tonogram is a specific type of x-ray that shows a series of pictures of the part being studied.

Antigens Assays: Some forms of cancer can be diagnosed, or the degree of activity of the disease monitored, by a blood test of "biological markers" or antigens. Although these tests are not refined yet, when used in conjunction with other diagnostic procedures, they can yield important additional information. The most common antigen now tested for is CEA (carcinoembryonic antigen). CEA tests may give indications of specific cancers or may be useful in monitoring the effectiveness of therapy (in much the same way as serum alkaline phosphatase).

Mammography: A mammograph is an x-ray technique that uses a low-energy beam to detect breast lesions. A mammograph is relatively accurate in detecting early breast carcinoma. It is recommended for women (1) who have a family history of breast disease, (2) who have physical findings that are questionable, (3) who have a difficult breast to palpate and (4) who have had a mastectomy.

Thermography: Thermography is a supplementary screening device. This procedure has an infrared scanner that measures the heat given off by the breast tissue. Sites of neoplasms have increased vascularity. Thus the heat emitted is increased and allows for early detection of neoplasma by the thermography.

LEARNING ACTIVITIES - continued

Xerography (xeromammography): Xerography is an improved means to visualize the breast and its structure. An aluminum plate with an electrically charged selenium layer is used in place of x-ray film and is exposed and developed. The xerograph is easy to interpret and exposes the patient to less radiation.

Computerized Axial Tomography (CAT, CT scanner): CT scanner is used to study cavities, neoplasms and densities of the body. This computer-aided x-ray examination allows for plain radiographs of a section of the body with a rotating x-ray tube. A tomogram, or picture of the body sections, is recorded. This aids in diagnosing tumors or other tissue abnormalities.

The unique aspect of the scanner is that no physical preparation of the patient is needed. However, the patient does need to be prepared to lie very still. Also the patient needs to know that tightly fitting restraints may be used and that the scanner rotates and makes a clicking noise. It is a very safe x-ray procedure, although it is quite costly.

Other diagnostic procedures

Other diagnostic procedures include breast self-examination, proctoscopic and signoidoscopic examinations, barium enemas, GI series and radioisotopic studies.

ACTIVITY #3. Treatments for Cancer

Directions: Read the following information.

Surgery

Surgery is performed for different purposes. It may be diagnostic, radical, prophylactic or palliative.

Diagnostic surgery involves the excision of a piece of tissue - a biopsy of tissue. The tissue is then examined to determine the presence of malignant cells. A biopsy provides the only positive diagnosis of cancer.

Prophlactic or preventive surgery is performed to remove potentially dangerous lesions that may develop into cancer if left in the body. Examples are removal of polyps in the colon, benign tumors in the breast or midline moles on the skin.

Radical surgery is the removal of all of the tumor including some surrounding tissue and the lymphatic vessels that drain the area. Surgery is performed before metastasis has occurred. If the cancer has metastasized, the surgery is not considered curative.

Palliative surgical treatment relieves the symptoms or complications of cancer but will not produce a cure. Examples are surgery to remove obstructions of the gastrointestinal tract or surgery to relieve pain caused by the extension of the tumor to surrounding nerves.

Radiation

All radioactive therapy is effective in destroying cancer cells and preventing their spread. However, some destruction of surrounding normal tissue and of normal rapidly growing, or immature cells (such as bone marrow cells) may also occur as a result of radiation. Forms of radiation therapy include x-ray, radium and radon and radioactive isotopes. The purpose and procedure should be explained by the physician and reinforced by the nurse.

X-ray: X-rays vary in penetrating power depending on the kind of x-ray apparatus used. The lower-voltage apparatus produces rays that penetrate superficial tissues of the body. It is useful when generalized irradiation is necessary. A higher voltage such as from the cobalt apparatus produces rays that are more penetrating. They can be localized to treat deep tumors such as those located in the brain, the lung and the abdominal or the pelvic cavities.

The patient may experience some reaction, especially to deep x-ray radiation. Side effects may include nausea, vomiting, diarrhea, headache and vertigo. The patient may experience fatigue, weakness, anorexia, leukocytopenia and anemia. The skin may redden, then turn dark, and dry and crack. Good skin care is very important. The skin should be kept dry and exposed to air but not sunlight. Ultraviolet light from the sun or sunlamps will further damage the skin. The patient may be asked not to shower and to avoid rubbing or washing the area even with plain water. Ointments and lotions should not be applied unless ordered by the physician. If the area receiving irradiation is close to the head or the neck, a female patient should be asked not to use cosmetics as cosmetics contain a metal base and may alter the effects of the radiation.

Encourage high-calorie, high-protein diet and high-fluid intake when nausea and vomiting are not present. Give reassurance and support.

Radium and Radon: Radium and radon are radioactive materials that produce deeply penetrating rays and are used for both internal and external application of radiation. Radon is the gas given off from radium as it slowly disintegrates. This gas is collected in gold tubes called seeds. Radon seeds do not need to be removed when implanted in a malignant lesion since they become inactive or harmless in a few days.

Radium is a radioactive metal that gives off rays as it decays. The radium is administered in needles, tubes, capsules or molds made of platinum, which must be removed after a prescribed period of time. Radium implants deliver intensive irradiation to a localized tumor such as in the mouth, the nasal cavities or the uterus. The applicator is inserted under the skin into the tumor and is threaded on a string that is taped to the patient's skin. Every eight hours and before the linen leaves the patient's room, these strings are counted to make sure that no loose radium is lost.

LEARNING ACTIVITIES - continued

The patient receiving radium will be isolated in a private room, and the nurse must be careful to protect herself/himself when caring for this patient. Nursing care includes the following:

1. Limit the time spent with the patient, giving only essential care. The patient can usually do self-care. Do not change bed linen unless it is soiled. Do stop at the patient's door at least every two hours to talk for a few minutes.

2. Nurses caring for the patient receiving radium therapy should be assigned on a rotating basis.

3. The patient will be on bedrest, so place everything needed within easy reach.

4. If the radium is placed in the vagina or the cervix, do not elevate the head of the bed because of the possibility of dislodging the radium. Encourage the patient to turn frequently by rolling from side to side with her legs close together. Remember to count the strings attached to the radium implants periodically.

5. The time of removal of the radium is noted on the patient's chart and may be noted on a tag placed on the patient's wrist. Notify the radiologist at least 30 minutes before removal time.

Radioactive Isotopes: Certain elements have an attraction force for specific tissues in the body and will almost exclusively accumulate in those specific tissues. Elements such as iodine, sodium, phosphorus, cobalt or gold may be made radioactive by artificial means. They are then called isotopes. The special precautions used in caring for patients who have received radioactive isotopes depend on the isotope used. Know the isotope used and the prescribed precautions.

Chemotherapy

No drugs have been discovered that can cure cancer. However, chemotherapy may offer some help to patients for whom surgery and radiation are no longer beneficial. Drugs may slow the advance of the disease and produce a regression of the tumor or its metastasis. Some patients experience temporary relief of pain and other symptoms. All of these drugs are also toxic to normal cells and the patient receiving chemotherapy must be carefully observed. The drugs are covered in Unit 19, Module J, "Medications Used for Cancer Therapy."

Immunotherapy

Research is presently being conducted on immunotherapy. This therapy is effective in selected cases. It can be used after other therapies have removed or reduced the amount of tumor or it may be used simultaneously with other therapies in patients with advanced diseases. The most common agent used for this therpay is BCG (Bacillus Calmette-Guerin). The administration of BCG can prolong remissions and survival time; and when injected into solid tumors, has caused regression of the tumor. Another method is active specific immunotherapy, in which the patient with cancer is given injections of modified tumor cells or tumor antigens to induce or boost specific immunity to tumors that are susceptible. (Review Unit 17, Module K on types and methods of immunizations).

LEARNING ACTIVITIES - continued

ACTIVITY #4. Review Exercise

Directions: Answer these questions by filling in the blanks or by circling "true" or "false."

1. Another word for tumor is ________________.
2. All tumor cells originate from tissue that is foreign to the body.
   TRUE FALSE
3. The tissue from which the tumor originates is called the ________________ tissue.
4. If a tumor is nonmalignant, it is ________________.
5. What tissue does a myoma affect? ________________
6. Another word meaning a pigmented skin tumor or a mole is ________________ .
7. A benign tumor of fatty tissue is called a(n) ________________.
8. Define the word tumor: ________________
9. If a neoplasm is malignant, it is cancerous. TRUE FALSE
10. The type of cancer that arises in epithelial tissue is ________________ .
11. A sarcoma is a type of cancer that originates in ________________ tissue.
12. When a mole changes and becomes cancerous, the tumor is known as a(n) ________________.
13. Cancer of the bone is called ________________.
14. A malignant tumor is usually composed of many mature cells that are multiplying very rapidly. TRUE FALSE
15. A Grade IV cancer is more malignant than a Grade I cancer because its cells are less like the parent tissue. TRUE FALSE
16. List three ways that cancer may spread.
    a. ________________
    b. ________________
    c. ________________
17. If cancer originated in the breast and spread to the brain, the new tumor in the brain is called a(n) ________________ growth.

LEARNING ACTIVITIES - continued

18. List cancer's seven warning signs.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

f. ______________________________

g. ______________________________

19. A ______________ provides the only positive diagnosis of cancer.

20. When surgical treatment of cancer relieves the symptoms but will not produce a cure, it is known as ______________ surgery.

21. Surgery done to prevent cancer is called ______________ or prevention surgery.

22. Radical surgery, done to cure the cancer, involves removal of only the tumor and its surrounding tissue. TRUE FALSE

23. Patients who receive x-ray therapy may have some radiation reactions. List four possible side effects.

a. ______________ c. ______________

b. ______________ d. ______________

24. List three precautions to take in caring for the skin of a patient who has received x-ray therapy.

a. ______________________________

b. ______________________________

c. ______________________________

25. The gas given off by radium is called ______________.

26. All patients who have been treated with radon seeds must have these applicators removed after a prescribed time period. TRUE FALSE

LEARNING ACTIVITIES - continued

27. Since the radium implants in patients emit dangerous radioactive rays, nurses must be careful to protect themselves when caring for such patients.
    TRUE FALSE

28. When iodine has been artificially made radioactive to treat cancer of the thyroid, the element is known as radioactive ____________________ .

ACTIVITY #5. Cancer of the Colon and the Rectum

Directions: Read this material.

The most frequent sites of terminal cancer in both men and women is in the colon and the rectum. Cancer of the colon is more common in women and cancer of the rectum is more common in men. It usually occurs in patients after the ages of 50 to 60 years.

Diagnostic procedures include:

1. Rectal examination and sigmoidoscopy - about 70% of all cancer involving the colon and the rectum can be seen during a sigmoidoscopy, a proctoscopic examination or a colonofiberoscopic examination. For this reason the American Cancer Society recommends a proctoscopic examination for all people over 40 years as part of the yearly physical examination.

2. Upper G.I. series and barium enema.

3. Examination of stools for occult or frank blood.

Signs and Symptoms

The early symptoms of cancer in the colon and the rectum may easily be ignored by the patient. The cancer may have metastasized to the lymph nodes and the liver before the patient sees the physician. Only about 40% of all patients with operable cancer survive. Symptoms include:

1. Changes in bowel habits since the tumor in the colon may gradually obstruct the colon causing excessive flatus, some abdominal distention and alternating constipation with diarrhea. The diarrhea develops when the partially obstructed intestine, which is distended with stool, uses very forceful peristalsis to try to force the stool past the obstruction. If the tumor grows large enough to completely obstruct the colon, the patient will experience severe abdominal pain and the abdomen will be distended and "boardlike" to touch. The patient will have persistent nausea and vomiting and may vomit fecal material when the forceful peristalsis reverses itself in an attempt to empty the intestine.

2. If the tumor is in the rectum, a pencil or ribbon-shaped stool is caused from it's passing through a narrowed opening.

LEARNING ACTIVITIES - continued

3. Passage of blood in the stool; the stools may be tarry if the tumor is in the colon or the patient may notice bright-red blood in his stools if the tumor is in the rectum. Blood in the stool is usually a late symptom.

4. Weight loss and anemia are also late symptoms.

Treatment by the Physician

Treatment is operative and depends on the location of the tumor. If the tumor is high in the colon - the ascending, traverse, descending and upper part of the sigmoid colon - it may be resected and the colon anastomosed. Anastomosis is the surgical end-to-end reconnection or the joining of the two sections of the colon after the tumor has been removed. If the tumor in the colon is large or has metastasized, a temporary or permanent colostomy may be performed to relieve intestinal obstruction.

ACTIVITY #6. Cancer of the Lung

Directions: Read this information.

The incidence of carcinoma of the lung has greatly increased during the last several decades. A survey made for the American Cancer Society showed that the death rate from lung cancer among men is "soaring at almost epidemic rates." Lung cancer is three times more common in men than in women. The risk of developing lung cancer has been closely linked with cigarette smoking.

Diagnosis

Since symptoms of lung cancer usually do not appear until the cancer is well established, early diagnosis is difficult. Diagnostic procedures include:

1. Chest x-ray.

2. Bronchoscopy with biopsy.

3. Examination of sputum for blood and cytology.

Signs and Symptoms

Symptoms usually develop after the tumor is large enough to have spread, usually to the cervical lymph nodes, the esophagus and to the opposite lung. Symptoms include:

1. Persistent cough or change in cough pattern. May be productive with mucopurulent or blood-streaked sputum. The cough is frequently ignored or is attributed to smoking.

2. Hoarseness may occur if the tumor involves the nerve to the vocal cords.

3. Dyspnea and chest pain occur late in the disease.

4. Fatigue, weight loss and anorexia are also late symptoms.

LEARNING ACTIVITIES - continued

Treatment by the Physician

Surgery is successful in producing a cure only in the very early stages of the disease. The patient may have a lobectomy if the tumor is confined to a lobe of the lung or the patient may require a pneumonectomy if the tumor is large. Postoperatively, the patient will have chest tubes to drain secretions and blood continuously from the thoracic cavity. (Read Unit 17, Module C, "Nursing Care for the Patient With Diseases of the Respiratory System" for care of the patient with chest tubes.) Radiation therapy and chemotherapy may also be used to slow the spread of the cancer and to provide symptomatic relief.

ACTIVITY #7. Cancer of the Prostate

Directions: Read the following.

Cancer of the prostate is most common in men over the age of 50 years. Because prostatic carcinoma is usually asymptomatic in its early stages, the American Cancer Society recommends that all men over 40 years of age have a yearly physical examination including a rectal examination. Prostatic cancer usually metastasizes to the lungs, the liver and the bones.

Diagnostic workup includes:

1. Rectal examination in order to check for a hard mass on the prostate. The physician may massage the prostate during the rectal exam to produce a fluid that may be examined for cancer cells.
2. Cystoscopy that shows the effects of prostatic enlargement on the urinary tract. The gland may also be biopsied during the cystoscopic examination.
3. Biopsy is the only procedure that will confirm a diagnosis of early prostatic cancer. The biopsy may be obtained during the cystoscopic examination, through the rectum or through a perineal incision.
4. Blood test for acid phosphatase. Levels in the blood will be elevated if the prostatic cancer has metastasized. Normal levels of acid phosphatase is 0-2 units/ml.

Symptoms of prostatic carcinoma may include:

1. Urinary frequency, dysuria and noctura if the tumor is large enough to obstruct urinary flow.
2. Hematuria.
3. Back pain or sciatica, which may occur because of metastases to the nerves.

LEARNING ACTIVITIES - continued

Treatment by the Physician

If the tumor has not metastasized, a radical prostatectomy may be performed, removing the prostate gland, seminal vesicles and a portion of the urethra through a perineal or suprapubic incision. A bilateral orchiectomy, or removal of both testes, may also be performed. Androgen, a male sex hormone, is produced by the testes and will promote the growth and metastases of malignant prostate cells.

Estrogen, a female sex hormone, may be given to further inhibit the production of androgen. Administering estrogen often produces a temporary remission of the disease with relief of symptoms.

ACIVITY #8. Breast Cancer

Directions: Read the following.

The most common site of cancer in American women is the breast. Although the disease may occur at any age, it most frequently develops during and after menopause. The woman who has not had children is most likely to develop breast cancer and the woman who has had multiple pregnancies and has nursed babies is least likely to develop the disease. To protect herself, every woman should have her breasts examined by a physician at least yearly. She should also learn the techniques for breast self-examination and should practice this once a month at home especially five days past menses.

Methods of diagnosis may include:

1. Mammography.

2. Thermography.

3. Biopsy is the only accurate method of diagnosing a malignant breast tumor. The biopsy usually involves removal of the entire tumor and is done under general anesthesia in the operating room.

Signs and Symptoms

If untreated, breast cancer spreads by way of the lymphatic system to the brain, the lungs, the liver, the abdomen, the pelvic cavity and the bones. However, the breast is easily accessible and early diagnosis is possible. Symptoms of breast carcinoma include:

1. Lumps in the breast. Most lumps are not malignant but every lump should be examined by a physician. Since most cancerous tumors develop in the upper outer quandrant of the breast, the woman should be very careful when examining that area of her breast. The tumor is usually painless and moveable at first, but when it becomes attached to the skin or the chest wall, it can no longer be moved.

2. Dimpling or puckering of the skin.

LEARNING ACTIVITIES - continued

3. The nipple may retract and become inverted, and there may be an abnormal drainage or bleeding from the nipple.

4. The affected breast may become deformed and elevated.

5. Draining ulcers of the breast tissue is a late symptom.

Treatment by the Physician and Nursing Care

Surgical intervention is the only recourse in treating breast cancer. A simple mastectomy is the removal of a breast without lymph node resection. A radical mastectomy comprises removal of the breast and the underlying muscles down to the chest wall after the removal of the nodules and lymphatics.

Study this section of a nursing care plan for the patient after a radical mastectomy.

Patient Problem	Nursing Approach	Rationale
Circulatory disturbance in the extremities of the affected side.	Check hands and arms for coldness, inability to move fingers, cyanosis or blanching, edema or complaints of numbness. Check radial pulse. Report any signs to the nurse in charge.	The dressing is usually extensive and fairly snug to provide pressure and to prevent extensive bleeding.
May have a drainage catheter attached to a Jackson Pratt, a hemovac or a suction machine.	Test machine to make sure it is suctioning properly; make sure it is turned on. Reactivate hemovac every two hours. Milk tubing. Evaluate the amount and the color of drainage.	Prevent the accumulation of serum and the formation of a hematoma. Skin flap is then held tightly against the chest wall. Hemorrhage is a possible complication. Drainage will be bright red at first, gradually changing to pink-tinged, and to serous.
Possible lymphedema.	Elevate the entire arm on a pillow so that it is above breast level. Make sure that the hand is higher than the elbow.	Gravity helps remove fluid.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Loss of strength	After 24 hours or as ordered by the physician, encourage her to do self-care activities with hand on affected side such as brushing teeth, washing face and combing hair. Encourage exercises such as climbing the wall with the fingers or turning a rope attached to the doorknob. May need to medicate her for pain before doing exercises. Emphasize proper posture; do not allow patient to hunch over or to favor the affected side.	Prevent contractures and disuse of the arm.

What other patient problems and nursing approaches would you add to this general care plan? Remember, this patient is probably going to need a lot of emotional support. (A care plan is provided on the following page for your additions.)

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale

ACTIVITY #9. Cancer of the Cervix

Directions: Read this information.

The cervix is one of the most common sites of cancer of the reproductive system in women. It usually occurs between the ages of 30 to 50 years. Statistics show that sexual activity may have some relationship to the incidence of cancer of the cervix since it is most common in those who have had sexual intercourse before the age of 20, who have had many sex partners and several pregnancies. Chronic infections and ulcers of the cervix may also contribute to the development of cervical cancer. Diagnosis usually requires a Pap test, a pelvic examination and a biopsy with Schiller's test of the cervix. The Schiller's test involves painting tissue from the cervix with a solution of iodine. Cancer cells not containing glycogen will fail to stain, thus revealing their presence. Women whose mothers took diethylstilbestrol (DES) to prevent spontaneous abortion have a higher incidence of vaginal and cervical carcinoma.

Symptoms of cancer of the cervix include:

1. Leukorrhea, which gradually becomes dark and foul smelling as the tumor causes infection and necrosis.

2. Irregular vaginal bleeding or spotting may be very slight or may be noted only after some form of irritation such as intercourse, douching or defecation.

3. Back pain and siatica as the cancer metastasizes to the nerves.

Treatment by the Physician

The patient with advanced cancer may be treated with radiation therapy or a radical vaginal or abdominal hysterectomy. A radical hysterectomy includes removal of the uterus, a portion of the vagina and the lymph nodes. (For nursing care of the patient following a hysterectomy, see Module G, "Nursing Care for Patients with Diseases of the Reproductive System.")

If the cancer is diagnosed very early, it may be treated by amputating the diseased portion of the cervix (partial hysterectomy).

ACTIVITY #10. Leukemia

Directions: Read this material.

Leukemia is a disease of the blood-forming tissues, the spleen, the lymphatic system and bone marrow that results in an abnomal production of white blood cells. The leukemia may be either acute or chronic. Acute leukemia usually occurs in young people under the age of 20 years with the highest incidence in children under the age of 4 years. Cancer takes the lives of more children under the age of 15 than any other disease with leukemia responsible for more than half of these cases. Chronic leukemia occurs in persons over 25 years of age. Diagnosis for leukemia is usually based on a blood count showing anemia, thrombocytopenia and an elevated white blood cell count. Diagnosis may be confirmed with a bone marrow specimen.

Signs and Symptoms

Symptoms of acute leukemia may develop slowly over a period of weeks but the onset is usually sudden with high fever and hemorrhage. Symptoms may include:

1. Upper respiratory infection and sore throat since resistance to infection is lowered.

2. Pallor, weakness and fatigue since the red blood cells carrying the oxygen are replaced by white blood cells.

3. Easy bruising or bleeding from the nose, the mouth, the gastrointestinal tract and the vagina since the thrombocytes or the platelets responsible for blood-clotting are also gradually replaced by white blood cells.

The symptoms of chronic leukemia usually develop very slowly and include:

1. Pallor, weakness, heart palpitations and dyspnea due to anemia.

2. A painless lump in the neck, under the arms or in the groin.

LEARNING ACTIVITIES - continued

3. An enlarged spleen.

4. A bleeding tendency.

Treatment

Treatment is usually supportive by giving transfusions of platelets and red cells to manage anemia and thrombocytopenia and antibiotics to treat infections as they occur. Chemotherapy destroys abnormal leukemia cells and may produce remissions in the course of the disease. Children with acute leukemia often live three to five years after the onset of symptoms and some are now cured. However, chemotherapy may also cause bone-marrow depression and interfere with the patient's immunological defense mechanism. The major causes of death are infection and hemorrhage. Patients with chronic leukemia may also be treated with radiation to the spleen.

Study this section of a nursing care plan for the patient with leukemia.

Patient Problem	Nursing Approach	Rationale
Lowered resistance to infection.	May be placed in reverse isolation.	Protects from infection.
	Use antibacterial soaps such as phisohex.	Protects skin bacteria.
	Keep intravenous sites very clean and check frequently for signs of phlebitis.	Protects from infection.
	Immediately report any symptoms of infection such as fever, chills, sore throats, phlebitis or abscesses.	Patient will be treated with antibiotics if infection develops.
Bleeding tendency.	Observe CAREFULLY - check contents of bedpan, urinal and/or emesis basin for evidence of gastrointestinal bleeding, hematuria, bleeding from the mouth, the nose and the lungs; watch for ecchymotic areas and petechiae.	May hemorrhage because of decreased platelets.
	Carefully monitor vital signs.	Changes in pulse and blood pressure may indicate internal bleeding.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
(continued)	Report evidence of bleeding immediately.	Hemorrhages may be treated with transfusions.
	Handle gently.	Avoids undue trauma.
	Avoid I.M. injections when possible. Carefully rotate sites. Use as small a needle gauge as possible. Apply firm pressure over site after the injection.	Helps to prevent bleeding.
	Give frequent, gentle mouth care with cotton swabs. Avoid using a toothbrush.	Gums bleed easily. Mouth care helps to prevent infection of the oozing mucous membranes and helps to prevent odors and bad taste.
	Stop bleeding when possible by applying pressure and elevating the part.	

What would you add to this care plan?

Patient Problem	Nursing Approach	Rationale

LEARNING ACTIVITIES - continued

ACTIVITY #11. Lymphoma

Directions: Read this material.

Lymphomas are groups of tumors of varing degrees of malignancy, which derive from the lymphocytes. These include the lymphosarcomas and Hodgkin's disease. Differential diagnosis is usually made through histolic (cell) study from a biopsy of a tumor or an enlarged lymph node. Lymphosarcoma is generally confined to the older age groups, whereas Hodgkin's disease has a high incidence in people between the ages of 18 and 35.

The majority of patients with lymphoma have an enlarged lymph node as a primary or initial symptom. In Hodgkin's disease, fever and generalized pruritus are initial symptoms in many patients. However, initial symptoms for either may be minimal. (More advanced symptoms depend upon the organs involved and are related to malfunctioning of that organ.) Recent advances in radiation therapy and especially in chemotherapy have made the outlook for lymphoma much brighter. Remissions in the disease have occurred, which may last for years during which time the patient is asymptomatic.

Hodgkin's disease is the most common form of lymphoma. This discussion of Hodgkin's disease may, at least in part, be generalized to all malignant lymphomas. Physicians have found it helpful to refer to Hodgkin's disease in terms of "clinical staging." This staging gives the degree of involvement (severity of disease) a numerical value understood by all in the medical profession.

Stage I - Involvement of a single node, organ or site.

Stage II - Involvement of two or more regions but on only one side of the diaphragm.

Stage III - Involvement on both sides of the diaphragm.

Stage IV - Multiple or generalized involvement.

Patients are also subclassified "A" or "B"; the absence (A) or presence (B) of unexplained fever, sight sweats or pruritus.

Treatment by the Physician

Hodgkin's disease is treated aggressively. Whenever possible, lymphatic tumors are surgically removed. The spleen is removed (splenectomy) as a prophylactic measure even if it is not involved (diseased). The cancer cells would invade the spleen first as it is lymphatic tissue. Irradiation of the area of involvement and the whole lymphatic trunk is usually performed. Review the material on x-ray therapy. Patients receiving irradiation on soft tissue, especially the digestive organs, are likely to be very nauseated with frequent vomiting and experience generalized malaise and fatigue. Remember that if the ovaries are irradiated, an acute menopause will be experienced. Following this, the patient may have symptoms of hormone imbalance. Chemotherapy is the main form of treatment (in conjunction with radiation therapy or when the disease is too generalized for either radiation or surgery to be effective alone).

LEARNING ACTIVITIES - continued

Review the module on cancer drugs (Unit 19, Module J). The wide range of drugs effective against Hodgkin's disease has produced long-term remissions and even statistically significant cure rates. Most of the therapy for lymphomas is done on an outpatient basis (except, of course, surgery).

Complications

Common complications of Hodgkin's disease are related to virus and bacterial infections. Herpes Zoster (shingles) is an example of a viral disease frequently occurring in conjunction with Hodgkins. Repeated attacks are possible because Hodgkin's disease, and the treatment for it, lower the body's immune responses, sometimes even extinguishing them (usually in generalized, active disease). If the disease progresses, various organs will be affected decreasing their normal function and producing complications (eventually producing respiratory, gastrointestinal or central nervous system failure). However, a majority of patients with lymphoma die from or with severe infections due to the lack of an immunological response.

ACTIVITY #12. Review Exercise

Directions: Answer the following questions by filling in the blanks or by circling "true" or "false."

1. What are the two most frequent sites of terminal cancer in both men and women?

   a. ____________________

   b. ____________________

2. List thee symptoms of cancer of the colon.

   a. ____________________

   b. ____________________

   c. ____________________

3. The name of the operation in which the anus, the rectum and part of the sigmoid colon is removed is a(n) ____________________.

4. List two diagnostic procedures for lung cancer.

   a. ____________________

   b. ____________________

5. Hoarseness may be a symptom of lung cancer. TRUE FALSE

6. A lobectomy is the removal of the entire lung. TRUE FALSE

LEARNING ACTIVITIES - continued

7. What is the only procedure that will confirm an early diagnosis of prostatic cancer? ____________________

8. List three symptoms of prostatic cancer.

   a. ____________________

   b. ____________________

   c. ____________________

9. Why is estrogen given to a man with prostatic cancer? ____________________

   ____

10. Almost all the lumps in the breast are malignant. TRUE FALSE

11. What is removed in a radical mastectomy? ____________________

12. Why should a woman be encouraged to move her arm on her affected side shortly following breast surgery? ____________________

    ____

13. Cervical cancer usually occurs in women between the ages of ____ to ____ years.

14. How would a physician confirm a diagnosis of leukemia? ____________________

    ____

15. Define thrombocytopenia: ____________________

    ____

ACTIVITY #13. Emotional Care

Directions: Read the following.

Emotional Care

Emotional support is an important part of the care given to a patient with cancer. The nurse should be able to give support and hope to the patient and his or her friends and family members. Compassion is necessary, but supporting false hope should be avoided. The patient may experience many fears such as fear of the hospital, fear of pain, fear of disfiguring radical surgery or financial problems connected with illness. The nurse should be aware of these fears and try to understand them.

LEARNING ACTIVITIES - concluded

Anxiety and depression may be part of the cancer patient's response to his or her disease. There are always the questions, "Why me?" and "Am I being punished by God?" The nursing staff needs to know if the patient has been told that he/she has cancer. Be sure this information is recorded in the nursing care plan. This will allow for consistent supportive care from all those involved with the patient.

A humanistic approach to supportive care for the terminally ill is the hospice. The concept involves the "hospice" as a special facility for care of terminally ill patients. The staff is trained to support the psychological, spiritual, educational and personal needs of the patient and family in a friendly and warm atmosphere.

ACTIVITY #14. Clinical Assignments

Directions: Read the following objectives that are specific to the care of patients with cancer. You are responsible for their care as well as the general clinical objectives, when assigned to such patients.

Specific Clinical Objectives

To the instructor's satisfaction you will:

1. Provide nursing measures to alleviate:
    a. Anxiety
    b. Pain
    c. Fear
2. Demonstrate the nursing procedure for the following diagnostic tests given your assigned patients and determine if the test results are within normal range:
    a. Biopsy
    b. Scans
    c. Blood tests
    d. X-rays
    e. Antigen assays
    f. Breast examination
    g. Mammography
    h. Thermography
    i. Xerography
    j. Pap smear
    k. Proctoscopy sigmoidoscopy
3. Demonstrate nursing care of patients with therapy specifically related to carcinomas. Include:
    a. Recognizing the "7 danger signals" of cancer
    b. Surgery
    c. Radiation therapy
    d. Chemotherapy (side effects)
    e. Immunotherapy

unit 17

NURSING CARE OF ADULTS

Module K - Nursing Care for Patients with Infectious Diseases

RATIONALE

It is usually easier and less costly to prevent an infection than to cure it. The practical nurse must assist the patient in maintaining body defenses against infections in order to protect patients, team members and others in that environment. Early recognition of infections will lead to prompt treatment and the patient's more rapid return to good health.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction, you will:

1. Demonstrate appropriate nursing care following the objectives in Activity 21 when given a clinical assignment of caring for a patient with an infectious disease.
2. Identify the sources for the infections given in this module.
3. Identify microorganisms discussed in this module.
4. Identify the physical symptoms, treatment and prevention for the infections given in this module.
5. Identify the appropriate nursing action used to care for a patient with an infectious disease in given situation questions.
6. Identify methods of preventing infectious diseases.
7. Identify five types of isolation.
8. Identify complications and the nursing care associated with a burn patient.
9. Identify the body's external and internal defenses against infections.
10. Identify types of immunity.
11. Identify the steps that must be present to cause an infection.
12. Identify laboratory tests used to diagnose infectious diseases.
13. Identify vocabulary terms from Activity #1.
14. Identify the classification systems for describing burns.
15. Verbally describe or name the nursing action, patient symptoms, treatment and causes of specified diseases or situations that might be encountered in the care of patients with infectious diseases.
16. Identify the predisposing factors for wound infection.

LEARNING ACTIVITIES

Directions: The information you need to complete Module K is included in this module and in the reading assignments from your textbook Total Patient Care. You will also need to use Taber's Cyclopedic Medical Dictionary to define terms and conditions relating to infectious disorders and also review Unit 6, "Asepsis." Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material in this module. There are many infectious diseases and conditions; however, the infectious diseases and conditions discussed in this module are the most common. Remember to keep in mind the objectives as you read. If you have any questions, ask your instructor to help you answer them.

ACTIVITY #1. Introduction and Review of Infectious Disorders

Directions: Read and study Chapters 6 and 7, "Nursing the Patient With Community-acquired Infections" and "Nursing the Patient With Nosocomial Infections."

You will not be tested on your ability to perform safe isolation technique or sterile dressing changes, but a review of both of these procedures will help refresh your memory so you can provide good patient care in the hospital.

Now, review Unit 6 on asepsis. After reviewing Unit 6 and with the help of a medical dictionary if necessary, define the words below and on the next page.

1. Abscess: ______________________________
2. Antiseptic: ______________________________
3. Asepsis (medical): ______________________________
4. Asepsis (surgical): ______________________________
5. Anaerobic: ______________________________
6. Bactericidal: ______________________________
7. Bacteriostatic: ______________________________
8. Disinfectant: ______________________________
9. Endemic: ______________________________
10. Epidemiology: ______________________________
11. Excoriation: ______________________________
12. Exudate: ______________________________
13. Germicide: ______________________________

LEARNING ACTIVITIES - continued

14. Habitat: ____________________
15. Immunity: ____________________
16. Immunization: ____________________
17. Incubation: ____________________
18. Nospromial: ____________________
19. Occlusive: ____________________
20. Phagocyte: ____________________
21. Prophylaxis: ____________________
22. Pustule: ____________________
23. Pyemia: ____________________
24. Septicemia: ____________________
25. Tinea: ____________________
26. Toxemia: ____________________
27. Vectors: ____________________
28. Vesicle: ____________________
29. Virulent: ____________________

ACTIVITY #2. Infections: General Information

Read the following.

Directions:

An infection is an invasion of the body by an organism that produces harm. Such an organism is called a pathogen or a pathogenic organism.

Because we do not live in a sterile environment, we are being bombarded constantly by pathogens. However, we do not always become infected. For example, we all have staph aureus on our skin, in our noses and throats but we are not necessarily infected. The natural habitat for staph bacillus is our skin; therefore, it is normal and natural for the pathogen to be present on our skin. If the staph bacillus were to gain entrance into the urinary bladder, however, an infection would occur.

A number of factors cause infections. Pathogens must follow the steps below in order to cause an infection:

1. An invading pathogen must be present - for example, staphylococcal.

LEARNING ACTIVITIES - continued

2. The invading organism must have a habitat in which to grow and to mature. For example, staph grows on skin.

3. The pathogen must have a way in which to leave its home environment. For example some staph leave the skin when we wipe our hands on something or hold onto something.

4. The pathogen must have a way to be carried to the host (person being invaded). For example, if we have touched a 4 x 4 sterile bandage with our bare hands, some staph will be deposited on the 4 x 4.

5. The infecting pathogen must have a way to enter the host's body. For example, if the 4 x 4 bandage were placed on an open wound, the infecting organism could enter the body.

6. The host must be susceptible to the invading pathogen.

Each of these steps must be carried out before a host can become infected, but other factors also determine whether there will be an infection or not. These factors are concerned with the host and pathogen.

The Pathogen:

1. Must have sufficient numbers.
2. Must be virulent.
3. Must be abie to survive in the new environment.
4. Must be exposed to the host for a sufficient length of time to grow and multiply.

What five things must be present for bacteria to live?

1. ______________________________

2. ______________________________

3. ______________________________

4. ______________________________

5. ______________________________

The Host:

1. Must not be resistant to the pathogen (susceptability).

2. Must be in physical, emotional and mental state that is favorable to the growth of the bacteria. Usually the person is ill, rundown, malnourished, depressed or anxious. The person's defenses are generally down.

Some bacteria need special conditions to grow and cause infection. Two examples would be tetanus bacillus, which must grow in the absence of oxygen, and the bacteria that causes typhoid, which prefers to live in lymphoid tissues. Each pathogen has its own "best conditions to survive in."

LEARNING ACTIVITIES - continued

If all of the steps are carried out by the invading pathogens in the order listed, and if a sufficient number of virulent pathogens invades a susceptible host, an infection results.

ACTIVITY #3. Types of Microorganisms

Directions: Read the following.

There are many hospital-acquired organisms that are responsible for infection. Staphylococcus is responsible for most infections of the skin while streptococci and Escherichia coli may infect wounds. Other organisms that may be responsible for infection are proteus, pseudomonas and klebsiella. These organisms may cause infection of the urinary tract, lung, internal organs and other body areas that are susceptible to them. Most people have a high tolerance for these microorganisms, but the very old, the very young and those with metabolic disease, acute infectious wounds or abrasions are very susceptible to them.

Bacteria are not the only organisms responsible for infections. Viruses are also responsible for infection.

Staphylococci

Staphylococci are organisms normally found in the nose, throat, hair follicles and sweat glands of humans. In hospitals, these organisms are most frequently transmitted by the hands of the personnel. Since staphylococcus is so pervasive and increasingly resistant to antibodies, it is extremely important for the nurse to maintain aspetic techniques in giving patient care.

Escherichia coli (colon bacillus)

The bowel is the natural habitat of some pathogens such as Escherichia coli. This organism does not produce disease in the bowel, however, it may be transported in the feces to areas of the body that are susceptible to its growth. Escherichia coli often cause infection of the urethra, bladder and vaginal area. It is of prime importance to teach women patients to always wipe from front to back to prevent organisms from being brought into the perineal are. Handwashing after handling excreta is a must!

Colon bacillus can also contaminate drinking water supplies. Therefore it is very important to be aware of where and how wash products are disposed to prevent this possible contamination.

Streptococcus

Most species of streptococcus are harmless. However the beta hemolytic strep is frequently the cause of sore throats and tonsillitis. If the infection is not treated, there may be severe consequences such as scarlet fever, rheumatic fever and glomerulonephritis.

Hospital-acquired infections of the urinary tract and surgical wounds and blood stream are attributed to group D streptococcus.

LEARNING ACTIVITIES - continued

Proteus bacilli

One species of this bacteria is proteus uulgaris, which is found in feces, water and stools. This species frequently is the cause of urinary tract infection. Another species, proteus margani, may cause infectious diarrhea in infants.

Pseudomonas

Pseudomonas alkugenosa, a gram negative bacillus that is the cause of some urinary infections, can be found in necrotic tissue in wounds and burns and can cause meningitis following a lumbar puncture. If not controlled, it results in septicema with vasogenic shock and death. Pseudomonas are usually resistant to most antibiotic therapy. Because it is resistant to antibiotics, it emerges as the dominant infecting organism after other bacteria have been eliminated.

Klebsiella

Kebsiella is an organism that can be found in the intestinal tract as well as in the respiratory tract. Kebsiella frequently results from hospitalization and it is resistant to antibiotics. When resistance is lowered by disease, the patient is predisposed to pneumonia caused by Klebsiella pneumoniae. This is even more possible if the patient is receiving an antibiotic that has changed the normal flora of the upper respiratory tract.

The source of klebsiella in the hospital has not been specifically identified, but it is felt that equipment and nurses' hands are possibly responsible.

ACTIVITY #4. Defenses Against Invading Pathogens

Directions: Read the following.

Many defenses, both external and internal, help us ward off infections.

A. External Defenses

1. Unbroken skin and mucous membranes are the first line of defense.
2. Acid medium of the skin (perspiration) is a defense.
3. Mucous membranes line the respiratory tract, gastrointestinal tract and urinary tract.
4. Lacrimal fluid (tears) destroys some pathogens and washes foreign material from the eye.
5. The high acid content of the stomach acts as a barrier to pathogens that are swallowed.

LEARNING ACTIVITIES - continued

6. Certain enzymes and alkaline bile that destroys pathogens are swallowed and enter the intestines.

7. Acid vaginal secretions usually destroy pathogens entering the vagina.

8. Fine, hairlike projections (cilia) in nasal cavities, trachea and bronchi sweep pathogens toward the pharynx where they may be swallowed or expectorated.

9. Fine hairs about the external openings help to prevent the pathogens from entering, and sticky mucous secreted by the cells trap those that do enter.

10. Involuntary or reflex acts such as sneezing, coughing, vomiting and diarrhea help to rid the body of pathogens.

B. Internal Defenses

1. Histamine, released by damaged cells, causes inflammation in the attempt to localize injury.

2. Increased blood flow to area brings leukocytes to digest bacteria.

3. Lymph nodes ingest and destroy bacteria.

4. Phagocytic cells in the spleen, the liver, the lungs, bone marrow and the adrenal glands digest bacteria and foreign particles in the bloodstream.

ACTIVITY #5. Immunity

Directions: Read the following.

Immunity is a state of being resistant to a disease. Those who are not immune must be vaccinated or artificially immunized.

Before you become too confused, read the following information that categorizes and explains the different types of immunity.

1. Active Immunity

Active immunity is caused by the body's response to a pathogen. The body produces antibodies whenever a pathogen is introduced into the system making the body resistant to the disease that it may cause. Therefore, the body actively responds to the pathogen.

LEARNING ACTIVITIES - continued

A. Natural, active immunity is the body's natural ability to make antibodies that fight against an infectious disease once the body has been exposed to the pathogen.

   (1) All people are immune to the pathogen that causes distemper.

   (2) Some people are naturally immune to poison ivy, while other people have a violent reaction.

B. Acquired, active immunity is produced after the body has received an injection of the pathogen or its toxin. This is called an inoculation and it stimulates the body's production of antibodies. Inoculation is effective only if the disease is not already present. Acquired, active immunity is also produced after having the disease. This is the most durable kind of immunity.

   (1) Polio vaccine consists of a less virulent form of the polio virus. This vaccine causes the body to produce antibodies to fight the disease, not to develop the disease.

   (2) Chicken pox is an example of a disease that produces antibodies and an active immunity after recovery. A person seldom develops chicken pox twice.

2. Passive Immunity

Passive immunity develops when we are given an antibody to fight off an infectious disease. The body does not produce the antibody.

A. The antibodies that a mother has acquired, except the one for whooping cough, pass through the placenta and protect the newborn from infections for three to six months. This is the only natural form of passive immunity.

B. Passive immunity is acquired from injections of antibodies derived from horse, rabbit or cow serum. For example diphtheria and tetanus toxoid serums produce acquired passive immunity.

ACTIVITY #6. Physiology of an Infection

Directions: Read the following information that traces the physiology of an infection.

Let us say that while slicing an onion one day you accidentally cut your finger and staph aureus enters the wound. The following events would occur in your body. The cells that were injured by the cut would release histamine, which would start an inflammatory reaction where you were cut. Pain, swelling, redness, warmth and a body fever may occur. Even though you may think that the pain, swelling and the warmth are symptoms you would rather not have, they are signs that the leukocytes are at work in the area, digesting the bacteria and stopping the infection. Even the elevated temperature, which accompanies infection and inflammation, is caused by the release of histamine and triggers the production of white blood cells to help fight off the infection.

LEARNING ACTIVITIES - continued

Uncomfortable, yes, but an inflammation in a wound tells you that your body is at work and also tells you to watch the wound because the body may not be able to take care of the invasion and antibiotics may have to be ordered.

ACTIVITY #7. Typhoid Fever and Salmonella Infections

Directions: Read the following.

Over 1,000 different strains of the salmonella bacteria cause many diseases, from typhoid fever to pneumonia. Since a majority of them cause gastroenteritis or food poisoning, we will discuss only the bacteria related to gastrointestinal upset.

The bacteria usually invade the body through the mouth when contaminated foods are eaten or foods handled by persons with the bacteria on their hands. Milk, water and animal tissue are the usual sources of the infection. Eggs with cracked shells allowing the bacteria to enter and grow are also causes of infection.

The best way to prevent a salmonella infection is to wash your own hands before eating, keep foods properly refrigerated and check eggs for cracks before leaving the store. You should also wash your hands after urinating or defecating. The Public Health Department also helps prevent diseases by requiring that restaurant employees wash their hands frequently, handle foods properly and refrigerate all perishable foods.

The usual signs and symptoms of food poisoning or typhoid fever are nausea, vomiting, elevated temperature and generalized malaise. With typhoid fever, a rose-colored rash develops.

Nursing care for the patient with food poisoning includes forcing fluids orally, if possible, or parenterally, if necessary. Antibiotics are not usually given since they do not shorten the length of time the person is ill or lessen the severity of the symptoms. In other words, the disease has a certain course to run and it runs it completely with or without medication.

Patients with typhoid fever must have antibiotic therapy. One antibiotic generally used is ampicillin. If no improvement is seen, Chloromycetin may be given.

Nursing care for the patient with typhoid fever includes the same care given anyone in gastrointestinal distress with an elevated temperature. The one precaution that you must take, however, is isolation of the stools and urine. Depending on hospital procedure, these eliminations may have to be disinfected with a solution before being flushed down the toilet. The patient should be informed that the bacteria may remain in his/her system for three to six weeks and that stool precautions (handwashing and wiping the toilet seat with an antiseptic) should be carried out at home.

LEARNING ACTIVITIES - continued

ACTIVITY #8. Tetanus (lockjaw)

Directions: Read the following.

Tetanus is caused by bacteria (Clostridium) that normally live in the bowel of humans and animals, but also survive in the soil or other places without air (anerobic). This disease is most commonly contracted when bacterial enter an open wound. A cut on the foot from a rusty nail or a scratch from a rusty barbwire fence are classic examples.

Once the bacteria are in the wound, they go into the bloodstream and travel to the central nervous system where they produce a strong toxin. This toxin causes continuous, severe contractions of the muscles. The first set of muscles affected is usually the jaw muscles making it difficult to open the mouth, thus the name lockjaw. Then, the face and neck muscles contract giving the expression of constant laughing. Next, the abdomen becomes tense and the back arches.

Treatment

There are three main goals when treating this patient.

1. Destroy the bacteria and the toxin.
2. Prevent the muscle contractions and spasms (the more the muscles contract, the more the toxin is spread to other myoneural synapses).
3. Give anticonvulsants such as Dilantin or phenobarbital.

The bacteria and toxins are destroyed by treatments. These are included in the treatment plan on the next page.

Study the plan on the next page for appropriate nursing care of a patient with tetanus.

LEARNING ACTIVITIES - continued

Care Plan: Tetanus
Isolation: Skin and Wound

PATIENT PROBLEM	EXPECTED OUTCOMES	NURSING DIRECTIONS
Date		
1. Anxiety	Relaxed and cooperative	1. Reassure patient. 2. Explain each procedure. 3. Provide a quiet environment. 4. Move patient when necessary, quietly and carefully. 5. Give sedatives as ordered and needed.
2. Spasm—rigidity, pain	Relaxed and free of spasm	1. Provide a quiet environment. 2. Record observation of spasm - time, duration and location. 3. Give analgesics as ordered and needed.
3. Dysphagia	Eat and drink normally	1. Assist patient with meals and observe and record of shift. 2. Suction prn. 3. I & O
4. Dyspnea	Easy respirations	1. Report any sign of dyspnea. 2. Count respirations and record if labored or difficult.
5. Urinary retention	Voiding q.s.	1. I & O - strict
6. Fecal impaction	Normal B.M.	1. Record B.M. 2. Establish a B.M. pattern. 3. Laxatives as ordered prn.

LEARNING ACTIVITIES - continued

Specific treatments for the wound include:

TREATMENT	RATIONALE
1. IV tetanus antitoxin	Works against the toxin and makes it non-functioning.
2. Wound is left open to air, is frequently cleaned and debrided.	The Clostridium bacteria cannot live when exposed to air.
3. Oxygen by cannula can be placed right into the wound and sealed off.	The more O_2 introduced to the bacteria, the better the chances of killing them.

Even with the best treatment possible, once tetanus has been contracted, there is only one chance in four of surviving. Therefore, prevention is the best policy. If you are injured by something and dirt has gotten into the wound, get a tetanus shot. Although it may cost money and be time-consuming, you avoid the risk of getting lockjaw.

Immunization schedule:

Vaccine	Age
DPT vaccine - diphtheria-pertussis-tetanus	2 months 4 months 6 months
DPT booster	18 months
Td vaccine - tetanus-diphtheria	6 years (school entry) 14 years Every 10 years thereafter (within the last year if a particularly dirty or puncture wound is sustained)

DPT vaccine is actually three vaccines combined into one.

1. Diptheria is a very serious disease that can affect people in different ways. It can cause an infection in the nose and throat that interferes with breathing. It can also cause an infection of the skin. Sometimes it causes heart failure and paralysis. About one person out of every ten who gets diptheria dies of it.

2. Pertussis, or whooping cough, causes severe spells of coughing that can interfere with breathing. It also often causes pneumonia. Convulsions, brain damage and death may occur, most often in very young infants.

3. Tetanus. (See previous discussion)

ACTIVITY #9. Gas Gangrene

__Directions:__ Read the following.

Like tetanus, gas gangrene is caused by Clostridium bacteria that cannot survive in air. They are found in dust, dirt and wool. The most common way of contracting the disease is through an open sore or wound. This disease may be a severe complication of a compound fracture.

A patient who has gas gangrene will have a wound that is extremely painful and tender to the touch, swollen, red to purple in color with gas bubbles under the skin and an odorous, watery, brown drainage oozing from it. But, not only the wound will be affected, the patient becomes very weak, looses his appetite and appears pale and "washed-out." The temperature may be elevated and the pulse and respirations are rapid with a fall in blood pressure.

Since the drainage from the wound contains many bacteria, the patient must be placed in wound and skin isolation. Special care must be taken to see that the patient's dressings are properly destroyed, instruments properly sterilized and the linen properly double-bagged and marked.

With the use of many of the new antibiotics now available, the infection may be conquered. If there is a problem with poor circulation to an extremity, as with a severely traumatic wound caused by a car accident or a wound on a diabetic patient, healing of the wound may be impossible and eventually the extremity may have to be amputated.

__Treatment for the Gas Gangrene Patient Includes:__

1. IV antibiotic therapy.

2. Frequent dressing changes or the wound may be left open to the air with O_2 administered at the wound sight.

3. Analgesics.

4. Debridement of wound.

5. Amputation if unable to control the infection.

LEARNING ACTIVITIES - continued

ACTIVITY #10. Rabies

Directions: Read the following.

Rabies is an acute infection caused by a virus that attacks the central nervous system. The virus is passed from animal to animal, including humans, by the saliva of the infected animal being introduced into the bloodstream of the unaffected animal. Usually, this occurs when the rabid animal bites another animal. However, it can also occur if, for example, a dog's saliva, which is infected with rabies virus, comes in contact with an open wound on a person's body. Thus the infection is passed through the open wound.

If a person is suspected of having been bitten by an animal with rabies, he/she must undergo a series of injections given subcutaneously in the abdomen, the back and the thighs, each day for 14 to 21 days. This has been the only way to prevent rabies from developing once a person is bitten. However, recent medical advances have resulted in a new vaccine that is less painful and can be given over a shorter period of time. Without these injections, the chances of survival are very, very slim. Fortunately, the immunization of household pets with rabies shots every three years has helped to decrease the frequency of the infection.

Signs and Symptoms

If a person is admitted into the hospital with rabies, very little can be done other than to make the patient as comfortable as possible. Such patients usually have difficulty swallowing, suffer from headaches and demonstrate an uncomfortable fear and irritability at one time and complete calmness at other times. This is phase I. Eventually in phase II, the throat and neck spasms become severe, breathing becomes difficult and severe convulsions occur. Phase III is paralysis, and then death. The patient usually expires within three to four days after the symptoms appear. The average incubation period is thirty to fifty days. Extensive bite wounds or bites about the head will shorten the incubation period.

Nursing Care

As with tetanus, any stimulus will bring about convulsions and severe muscle spasms. The best nursing care consists of keeping the patient in a dark, quiet room, away from noises, drafts and visitors. Special precautions must be taken when giving mouth care or when suctioning the patient. The patient is usually placed in respiratory isolation. Gloves should be worn whenever there will be contact with the patient's saliva.

ACTIVITY #11. Infectious Mononucleosis (Mono)

Directions: Read the following.

Mononucleosis is an infectious disease caused by a virus. It occurs most frequently in people ages 15 to 30 and is believed to be spread by the saliva and throat secretions of the infected person.

LEARNING ACTIVITIES - continued

Signs and symptoms include swollen lymph glands (especially in the neck), sore throat, headache and malaise. If the disease progresses, jaundice and enlargement of the liver and spleen may occur.

No drugs or antibiotics destroy the mono virus, and no immunizations exist to prevent it. Therefore, rest and care to decrease the severity of symptoms are the ways to care for this disease. Since relapses may occur the person should keep from becoming overly tired for some time.

Read the nursing care plan shown below for a patient with mononucleosis. Add the rationale for each nursing approach.

Patient Problem	Nursing Approach	Rationale
Sore Throat	Salt solutions can be used to gargle. Give medication ordered to relieve pain.	
Difficulty swallowing	Give lukewarm liquids, soft foods and small frequent nourishments.	
General weakness	Bedrest with BRP until the symptoms subside. Patient should remain indoors with little exercise. Patient should engage in minimum daily activities.	

ACTIVITY #12. Tuberculosis

Directions: Read the following.

Tuberculosis is an infectious disease caused by the tubercle bacillus microorganism that usually infects the alveoli of the lungs but can also infect bones, kidneys or spinal fluid.

The bacillus is spread through the air in little droplets, therefore, it is called an airborne disease. Coughing, sneezing and breathing by an infected person spread the bacillus in the air. Others breathe it in. If an individual is susceptible, an inflammatory process may begin at alveolar sites causing infection. Cells and fibrous tissue surround the tuberculosis bacillus, cut off its blood and nutrition supply and cause the TB bacillus to become encapsulated. What remains is a hardcased node that will show up on x-ray. Such a person does not have active TB but is said to be sensitized. This sensitization will last as long as the person is alive. The skin test will

LEARNING ACTIVITIES - continued

be positive. This person was lucky and did not become infectious. Again, if the person had been rundown, malnourished and had inhaled enough bacteria that were virulent, active TB may have developed. But the sensitized person is not free from danger. The bacillus will be in the lung forever. The bacillus is resting (dormant), but if the person should become emotionally or physically ill or excessively fatigued, the body defenses could be lowered and the TB bacillus would have a chance to grow and multiply and become a case of active TB.

Symptoms of TB include loss of appetite and weight, slightly elevated temperature, hemoptysis, night sweats, chest pain and hoarseness. The diagnosis is made by x-raying the chest to locate the lesion and by collecting sputum specimens to check for TB bacillus. If a specimen cannot be obtained, the patient may have a gastric lavage with the stomach contents checked for TB bacillus. This test is given if the patient is swallowing sputum instead of coughing it up. Of course, the popular skin test is always used as a diagnostic test, but the most it can tell is if the patient was ever infected, not if the disease is active.

Hospitalization is not always necessary for the patient with TB. TB can often be treated at home with medication and rest. Family members must be educated about the treatment of TB. The importance of always having tissues handy so the patient's oral secretions may be controlled and destroyed is emphasized. A well-balanced diet and daily medications as ordered are important aids in arresting a case of active TB.

Study the nursing care plan below and on the next page about appropriate nursing care and the important aspects of care to teach the family.

Patient Problem	Nursing Approach	Rationale
Coughing up sputum with TB bacillus in it.	Teach patient to cough and to sneeze into a tissue and then dispose it in a plastic bag. Tape the bag to the bedrails.	Stops bacillus from ever reaching the air. The patient can easily find the bag.
	Have sufficient circulation of air so that the stale air is forced outside into the sun and replaced by fresh air.	TB bacillus is destroyed by the sun in one to two hours.
	Have ultraviolet lights in bathrooms or rooms where no windows are present or where circulation is poor.	Ultraviolet light kills the bacillus.
	Have patient wear a mask if unable to cough into a tissue.	Some masks are meshed small and tight enough to prevent the TB bacillus from getting through to the outside.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Inadequate nutrition, weight loss, anorexia.	Increase calorie and protein diet.	To rebuild lung tissue.
	Allow family to bring favorite foods from home.	Patient may be more apt to eat foods brought from home.
	Try to get any food that may be requested immediately.	Patient usually does not eat much, but when there is a craving for a particular food, it should be readily available.
	Frequent, small feedings or between-meal snacks.	Patient will not be overwhelmed by big servings especially when he/she is not hungry anyway.

The more the community educates its citizens about TB, its causes and its prevention, the less afraid people will be of the disease and the more likely they will be to seek help if they suspect they have contracted it.

Nurses should also be teachers when TB is concerned, providing their patients, friends and families with facts about the disease.

Prevention includes early detection with yearly skin tests and chest x-rays. Most communities provide these services free of charge or at a very minimal charge.

ACTIVITY #13. Skin Infections Caused by Bacteria

Directions: Read the following.

Furuncles and Carbuncles

Furuncles are also called boils. Furuncles are staph-infected lesions that are caused by staph bacillus and affect the sebaceous glands or the hair follicles. They can be found anyplace on the body where hair is.

Carbuncles are also infected lesions caused by the staph bacillus. They affect many hair follicles and invade surrounding subcutaneous tissue.

Both infections begin with swelling, redness and pain at a localized area. Eventually the skin becomes shiny due to the infection that is developing under the skin. A "core" or yellow center will develop. When the core breaks open, purulent drainage is released, which reduces the pressure and also the discomfort and pain.

LEARNING ACTIVITIES - continued

Two general nursing measures are used for the care of a patient with a furuncle.

1. Bring the furuncle to a head or to maturity by applying warm packs to the area. The warm packs need not be sterile because the skin is not broken. Remove the warm packs the instant drainage begins.

2. Protect the furuncle to make sure that the infection does not spread.

   a. Discard dressings in a double plastic bag.

   b. Wash the wound and the surrounding area frequently with an antiseptic soap.

   c. Always wash your hands after treating the boil to avoid spreading the infection.

   d. Instruct the patient to use scrupulous handwashing techniques.

To avoid further problems, cross contamination must be prevented. Use sterile techniques and wash hands after treating the lesion.

One last thing, unless the physician lances the boil, it is never to be tampered with. Let it come to a head all by itself; never squeeze it or it will damage tissue and spread further.

IMPETIGO

Impetigo is a contagious disease caused by strep or staph bacteria. It usually begins as a small vesicle on the face or on the hands, which can easily spread to any part of the body. The vesicle becomes a pustule and then dries up, scabs over and falls off.

This disease is most common in young children. The child must be instructed not to scratch the sore or to rub it in any way. Again, cleanliness is the best policy. The child may have to stay home from school until the scab forms. Topical antibiotic ointment may be ordered to help prevent reinfection.

ACTIVITY #14. Skin Infections Caused by a Virus

Directions: Read the following.

WARTS

Warts are the most common form of viral infection of the skin. They are contagious and should be treated by a physician. Sometimes they will disappear without medical care, however, they may also multiply. To avoid any further infection, it is best to see a physician and have them removed.

HERPES SIMPLEX

Herpes simplex is better known as a simple cold sore. It is usually found about the nostrils, lips or genitalia. It begins as a vesicle, then cracks open, drains and finally a crust forms and eventually falls off.

LEARNING ACTIVITIES - continued

Nothing seems to relieve the pain or the swelling caused by herpes simplex. A moist compress applied to the genitalia may relieve some discomfort but usually the infection must be "waited out." It is usually of short duration but is a recurring condition.

This virus is located on our skin at all times. If we get too much sun, rundown or dry skin it may grow and become a cold sore. Do not give the virus a chance. Stay healthy and avoid excessive exposure to the sun.

HERPES ZOSTER

This disease is an acute infection of the central nervous system caused by the same virus that causes chicken pox, but affecting the host in a different way. The virus causes blisters that form on the skin following a nerve pathway of a sensory nerve. Usually they are only on one side of the body. They are very, very painful and itch unmercifully. Another name for this condition is shingles. Treatment consists of either analgesics or narcotics, depending on the severity of the pain, and supportive measures to provide comfort.

The most that can be done to assist this patient is the application of a drying lotion (calamine) to the area. The disease must run its course. The disease causes a high level of distrust leading to anxiety and resistance. The nurse needs to be tolerant and understanding when giving nursing care.

ACTIVITY #15. Athlete's Foot

Directions: Read the following.

Athlete's foot is caused by a fungus that causes cracking, peeling and itching of the skin on the feet, especially between the toes. It can also spread to the hands and to the groin if proper care is not taken.

Like any other disease, preventing is easier than curing. Patients should be taught to wash and dry their feet properly. The key word is dry. Cotton socks, rather than nylon or rayon, should be worn because they soak up more perspiration. Socks should be changed daily. Sandals are also preferred because they allow air to continuously circulate around the foot. This fungus cannot live without moisture, so the use of medicated powders after the feet have been washed and dried will help to keep them even drier. The nurse should remember that care of the feet is very important and to teach patients proper foot care.

This fungus is also found where infected human feet have trodden. Therefore, never walk into a public shower at a swimming pool without wearing rubber thongs or some type of protection on your feet!! Please!!

ACTIVITY #16. Burns

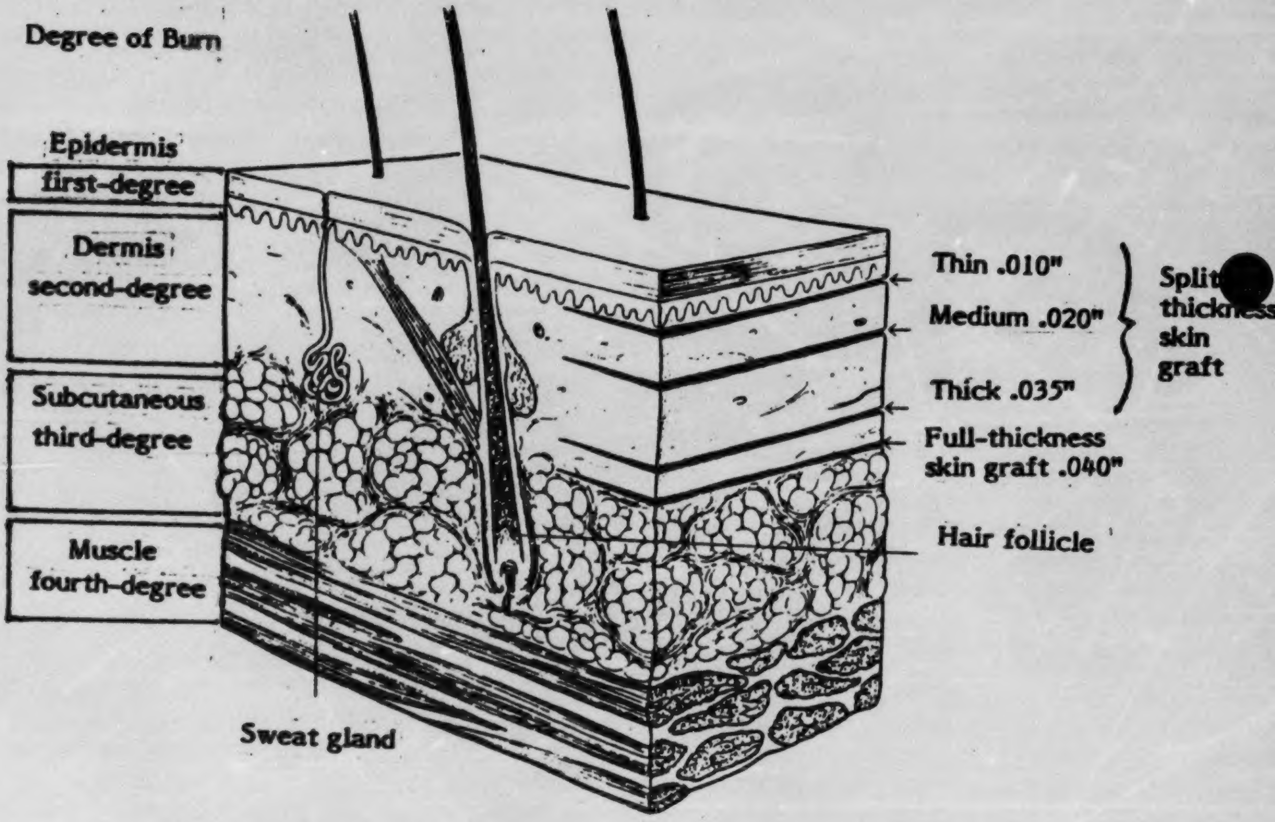
Directions: Read the following.

Different degrees of burns and their care will be discussed in this module because the prevention of infection can mean the difference between a second-degree burn and a third-degree burn and the difference between life and death.

LEARNING ACTIVITIES - continued

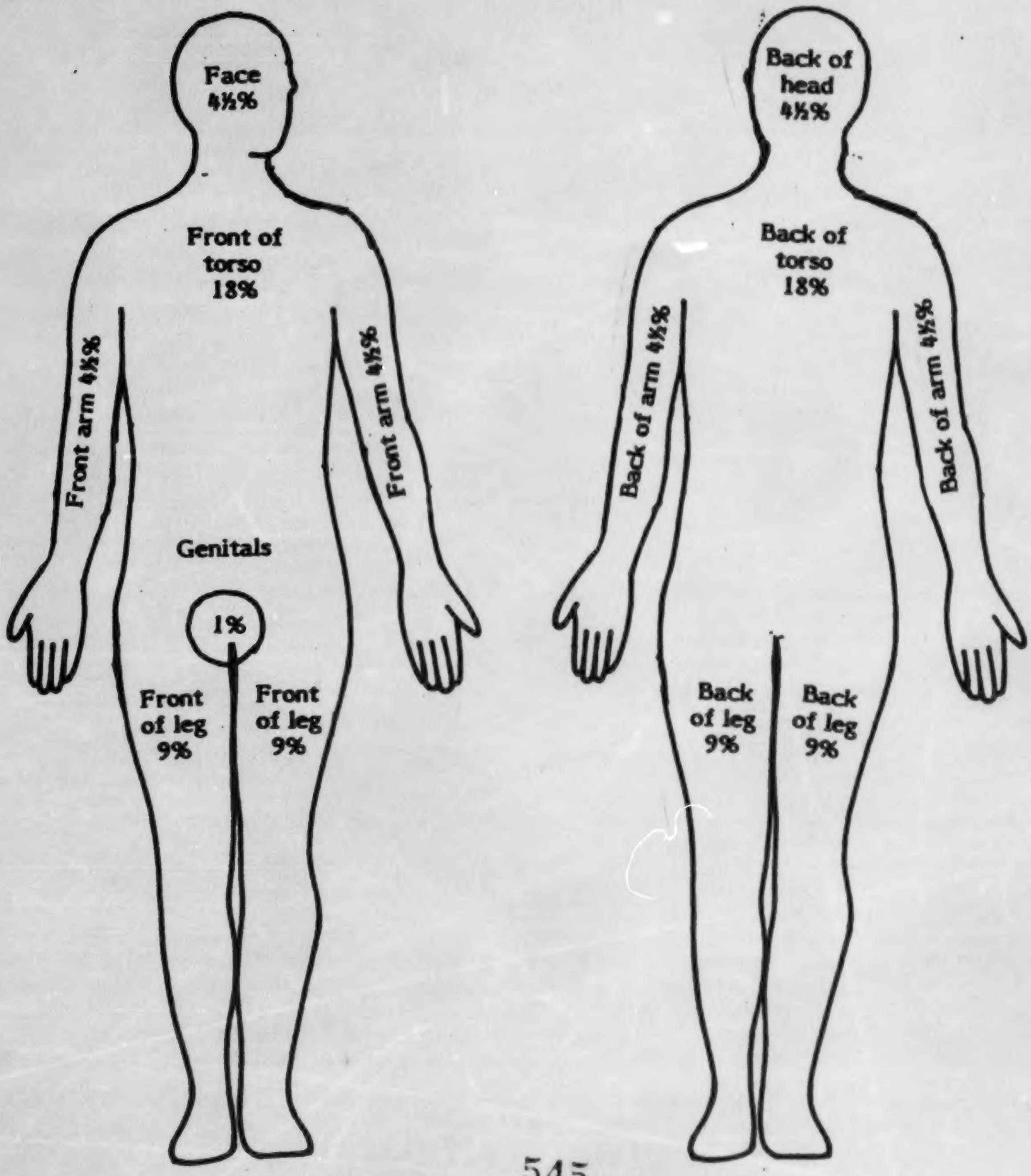
Burns are classified by their depth or by their penetration into the skin and by the total body area that has been burned. They are classified as first, second or third-degree burns. A percentage is attached to the extent of the body burned. That percentage is important in determining the extent of the tissue damage and the treatment.

LAYERS OF SKIN AFFECTED BY BURNS


Degree of Burn
Epidermis
first-degree
Dermis
second-degree
Subcutaneous
third-degree
Muscle
fourth-degree
Thin .010"
Medium .020"
Thick .035"
Split
thick
skin
graft
Full-thickness
skin graft .040"
Hair follicle
Sweat gland

LEARNING ACTIVITIES - continued

"RULE OF NINE" FOR DETERMINING THE AREA (IN PERCENT) OF THE BODY SURFACE BURNED


Face
4½%
Front of
torso
18%
Front arm 4½%
Front arm 4½%
Genitals
1%
Front
of leg
9%
Front
of leg
9%
Back of
head
4½%
Back of
torso
18%
Back of arm 4½%
Back of arm 4½%
Back
of leg
9%
Back
of leg
9%

LEARNING ACTIVITIES - continued

This chart shows the difference between first, second and third-degree burns. Please review.

	DEPTH	COLOR	PAIN	HEALING
1st degree	Very top layer of epidermis.	Reddened.	Tender to the touch.	May heal without scarring in one week.
2nd degree	All of epidermis and part of growing layer.	Pink with vesicles or weeping lesions.	Painful.	Will regenerate in 1 to 2 weeks, there may be scarring.
3rd degree	All layers of skin including growing layer.	Charred.	No pain as nerve endings are destroyed.	Usually requires skin grafts.

After studying the chart can you see that a second-degree burn covering 15% of the body would be considered minor compared to a third-degree burn covering 15% of the body? Or, that a third-degree burn covering 5% of the body would be considered minor compared to a second-degree burn covering 40% of the body?

The primary complication in burn patients within the first 48 hours is the excessive loss of fluid. When tissues are burned, the blood vessels in the area dilate, which allows fluid, protein, sodium and chloride to collect in the burn area. A blister is formed and edema occurs. Some fluid can be lost to the air if the wound is open; however, most of the fluid remains deep in the muscle and the connective tissue around the burn.

As much as 5 to 7½ liters of fluid may collect at the burn site. This huge collection of fluid causes a decrease in circulating blood volume and a decrease in kidney filtration. Such decrease causes shock and kidney shutdown. Therefore, fluid replacement is essential. IV fluids must be administered. It is very important that the nurse keep accurate records of hourly output in order to regulate the rate of IV and to keep the fluid replacement continuous until the body can build itself up again.

If the patient survives the first 48 hours, the number one complication and cause of most patient deaths is infection at the burn site or generalized septicemia. Preventing an infection may save a life.

LEARNING ACTIVITIES - continued

Ways to prevent infections are:

1. Antibiotics given prophylactically.
2. Sterile technique with all dressing changes.
3. Reverse isolation if wounds are open to the air.
4. Staff or visitors with upper-respiratory infections should not be allowed in the room.
5. Close door to patient's room to prevent dust and bacteria in the halls from reaching the patient.

Once fluid balance has been maintained and steps taken to prevent an infection, the following nursing care plan should be put into action to make the patient more comfortable and to help the healing process.

Patient Problem	Nursing Approach	Rationale
Pain	Assess pain before giving medications.	Patient may just be apprehensive and need a sedative instead of a narcotic. Not all burns are painful.
	Keep sheets and clothing off open wounds with a bed cradle.	Pressure on exposed nerve endings is very painful.
Poor nutritional intake due to anorexia	Give a high protein, high calorie diet.	To rebuild tissues.
	Give carbonated beverages.	To provide sugar and to replace lost electrolytes.
	Give meat broths.	To replace sodium.
	Give fruit juices.	To replace potassium.
	Give bulk foods such as breads and cereals.	To aid in elimination.
Contractures	Change position frequently. Range of motion every shift. Physical therapy for range of motion. Patient should lie on all four sides sometime during the day.	It may seem cruel to a patient who is severely burned, but if you remember that this will prevent contractures (and hours of work later), your sympathy will not get in the way of good nursing care.

LEARNING ACTIVITIES - continued

ACTIVITY #17. Review Exercise

Directions: Use the information you have read in this module and any other source of your own choosing to complete the chart below. This exercise is included to help you compare the differences between the types of infections discussed. Complete it and study it. It will help you to organize your thoughts and learn the material. If you have any questions or need some assistance, ask your instructor for help.

INFECTIONS	CAUSE	HOW SPREAD	TREATMENT	PREVENTION
Typhoid Fever				
Gas Gangrene				
Mononucleosis				
Tetanus				
Tuberculosis				
Rabies				

LEARNING ACTIVITIES - continued

SKIN INFECTIONS	CAUSE	HOW SPREAD	TREATMENT	PREVENTION
A. Bacterial				
B. Viral				
C. Fungal				

What type of isolation is used for the following diseases?

Typoid Fever ____________________

Hepatitis ____________________

Infectious Mono ____________________

Tuberculosis ____________________

Boils ____________________

Burns ____________________

ACTIVITY #18. Wound Infections

Directions: Read the following.

The health care team must take appropriate actions in avoiding wound infections. The nurse should know about types of patients who are susceptible to wound infections. A careful health history should be taken and the nurse should be aware of the following predisposing factors:

1. Smoking interferes with healing by altering platelet and pulmonary function.
2. Medications such as aspirin can interfere with platelet function.

LEARNING ACTIVITIES - continued

3. Obesity interferes with healing because excess tissue obstructs the blood supply to the outermost layer of the incision.

4. Diseases such as diabetes predisposes a patient to wound infection because of the slow-healing process.

5. Age can predispose a patient to wound infection because an aging body produces fewer antibodies.

Other patients who have a high risk for a wound infection are those who are anemic (hemoglobin below 10 gm/100 ml), patients with anorexia and patients with a vitamin C deficiency (wounds may eviscerate and/or dehisciate).

Care should be taken to help a patient to avoid vomiting, abdominal distention, faulty respiratory effort and improper or insufficient pain control. These may contribute to wound dehiscence and therefore place the patient in an environment in which infection can occur easily.

All care-givers involved in giving treatments or dressing changes should follow the appropriate measures. Many times the physicians, usually surgeons, prefer to do the first postoperative dressing change.

Medical asepsis is used when an incision is clean, dry and sutures are intact. A dressing is usually applied to protect the incision from irritation from clothing. Surgical asepsis (sterile gloves) is used when an incision has any kind of drainage or any kind of tube inserted. Usually an occlusive dressing is applied in which tape is applied completely around the edges of the dressing.

Remember if anything is coming out, any organism can get in.

Some useful hints for dressing changes are:

1. Take extra supplies and tape.

2. Take a pair of sterile gloves.

3. Take a plastic bag to dispose of the old dressing and other used material.

4. Note color, amount and consistency of the drainage on the old dressing and record.

5. Note condition of incision and record.

LEARNING ACTIVITIES - continued

ACTIVITY #19. Infection Control Measures for Isolation

Directions: Study the following chart.

Measure	Strict isolation	Respiratory isolation	Protective isolation	Enteric precautions	Wound and skin precautions
Single room	Required	Required	Required	Required for children only	Desirable
Gown	Required	Not necessary	Required	Required	Required during direct contact only
Mask	Required	Required for all susceptible persons	Required	Not necessary	Required during direct contact only
Handwashing	Required	Required	Required	Required	Required
Gloves	Required	Not necessary	Required	Required for persons in direct contact with patient or contaminated articles	Required during direct contact only
Linen and waste precautions	Required	Required for articles contaminated with secretions	Not necessary	Required	Required
Blood, excretions or secretion precautions	Required	Required for secretions only	Not necessary	Required	Required for secretions only

Extracted from "Isolation Techniques for Use in Hospitals," Atlanta, 1975, U.S. Department of Health Education and Welfare, Public Health Service, Center for Disease Control.

LEARNING ACTIVITIES - continued

ACTIVITY #20. Review Exercise

Directions: Answer the following questions by filling in the blanks.

1. List six microorganisms and their locations in the body.

_______________ : _______________

_______________ : _______________

_______________ : _______________

_______________ : _______________

_______________ : _______________

_______________ : _______________

2. What is the number one complication in burn patients within the first 48 hours?

____

____

3. What is the number one complication and cause of most patient deaths from burns after the first 48 hours?

____

____

4. List five types of isolation.

a. _______________

b. _______________

c. _______________

d. _______________

e. _______________

LEARNING ACTIVITIES - continued

5. What factors predispose a patient to wound infections?

6. List in proper sequence a dressing change using surgical asepsis.

ACTIVITY #21. Clinical Assignment

Directions: During the period of your medical-surgical experience, you will be assigned to at least one patient with infectious conditions. The following objectives are given to assist you in planning your nursing approach. Your instructor will observe you during any new treatments or procedures.

Specific Clinical Objectives

To the instructor's satistaction you will:

1. Provide nursing measures to alleviate:
   - A. Pain
   - B. Fear
   - C. Anxiety

2. Demonstrate the nursing procedures done for your assigned patients and determine if the test results are within normal range:
   - A. Throat, nose and wound cultures.
   - B. Blood work.
   - C. Gastric and bronchial secretions.
   - D. Skin testing—mantoux (TB)—valley fever (cocci).
   - E. Urine-stool specimens.

LEARNING ACTIVITIES - concluded

3. Demonstrate nursing care of patients with therapy specifically related to infectious disorders:
   - A. Isolation technique.
   - B. Medical-surgical asepsis.
   - C. Incubation and contagious periods.

4. Demonstrate teaching of patient and family:
   - A. Regarding relationship of diet, exercise and cleanliness in communicable diseases.
   - B. Regarding immunization process.
   - C. Regarding community agencies for supportive services.

5. Demonstrate a dressing change using surgical aseptic technique.

NURSING CARE OF ADULTS

Module L - Nursing Care for Patients with Allergic Conditions

RATIONALE

To give safe, effective nursing care to a patient in the hospital or at home with an allergy, you must know the causes of allergies and the physiological changes that are caused by the release of histamines.

PERFORMANCE OBJECTIVES

To the instructor's satisfaction you will:

1. Demonstrate appropriate nursing care following the objectives in Activity 10 when given a clinical assignment of caring for a patient with an allergic disorder.
2. Identify symptoms, treatments, preventions and the nursing care given a patient with hay fever in given situation questions.
3. Identify the cause, symptoms, treatment and the nursing care given a patient with asthma in given situation questions.
4. Identify the process, cause, symptoms, treatment and the nursing care given a patient with an allergic condition.
5. Identify the definition for terms relating to the allergic conditions discussed in this module.
6. Identify the symptoms, treatment and the nursing care given a patient with a condition requiring a tetanus injection.
7. Identify skin tests given to a patient with an allergic condition.
8. Verbally describe or name the nursing action, patient symptom, treatment, and causes of specified diseases or situations that might be encountered in the care of patients with allergic disorders.

LEARNING ACTIVITIES

Directions: The information you need to complete Module L is included in this module and in the reading assignments from your textbook Total Patient Care. You will also need to use Taber's Cyclopedia Medical Dictionary to define terms and diseases relating to allergies. Exercises are included to help you to learn the material. The answers for these exercises can be found by reviewing the material in this module. There are many allergic disorders; however, the diseases and conditions discussed in this module are the most common. Remember to keep in mind the objectives as you read through this module. If you have any questions, ask your instructor to help you answer them.

LEARNING ACTIVITIES - continued

ACTIVITY #1. Introduction to Allergies

Directions: Read Chapters 22 and 24, "Nursing the Patient With Problems of the Skin" and "Nursing the Patient with Allergic Conditions."

It may be helpful to review Module C in Unit 4 on the integumentary system. Several of the terms found in this module can be found in Unit 4. After reading your textbook and reviewing Unit 4, define the following terms. You may use your textbook or a medical dictionary to assist you.

1. Autoimmunity: ______________________
2. Bleb: ______________________
3. Colloid bath: ______________________
4. Dermis: ______________________
5. Emollient: ______________________
6. Epidermis: ______________________
7. Fissure: ______________________
8. Lacrimation: ______________________
9. Macule: ______________________
10. Papule: ______________________
11. Paroxysm: ______________________
12. Phagocytosis: ______________________
13. Photophobia: ______________________
14. Pustule: ______________________
15. Urticaria: ______________________
16. Vesicle: ______________________
17. Pruritus: ______________________
18. Rhinitis: ______________________
19. Permeability: ______________________
20. Wheal: ______________________

LEARNING ACTIVITIES - continued

ACTIVITY #2. General Information Concerning Allergies

Directions: Read the following material.

Allergies

An allergy is the body's response to some element in the environment. Not all people respond to these elements in the same way. Some people's bodies are more sensitive to a particular element. For example, one patient may become deathly ill from a bee sting, another patient may not. A patient may develop a rash from adhesive tape, another patient may not.

The element or substance that causes an allergic reaction in the body of a sensitive person is called an allergen. When an allergen is introduced to the body, it causes the production of antibodies. This body reaction causes the affected cells to release a chemical called histamine, which is a naturally occurring substance.

Allergens

In the general sense of the word, an allergen is any substance that triggers the production of antibodies. This could include anything from bacteria and a virus or cosmetics and iodine, to one's own blood cells or organ tissues. Anything could be an allergen.

In this module, we will talk about only the most common allergens that cause an unpleasant reaction when introduced to a sensitive person. They can be divided into four groups, categorized by how they are contacted. These groups are:

1. Inhaled: For example, pollen, perfume, dust, smoke and animal hair.
2. Ingested: For example, milk, chocolate, nuts, fish and aspirin.
3. Injected: For example, penicillin and demerol.
4. Contacted: For example, fabric dyes, plants, plastics, tape and detergents.

Antibodies

Antibodies are made up of protein substance and are produced by the liver, spleen and bone marrow as a defense mechanism for protection against disease or harmful substances. They work by helping the WBC or phagocytes surround and destroy or break apart the foreign substance. They are always present in the circulation.

Normally, the production of antibodies is a very positive and helpful reaction and is the basis for all of our vaccines against diseases such as measles and smallpox. But allergic responses create a reaction that is uncomfortable and serves no useful purpose.

LEARNING ACTIVITIES - continued

It may take minutes for the body to produce enough antibodies to a certain allergen to cause a reaction, or it may take years. That is why a person could suddenly become allergic to marigolds or pollen at age 45.

Histamine

When an allergen such as dust and an antibody are combined in a patient that is allergic to the dust, histamine is released by the destroyed cells. Histamine is the chemical that produces most of the symptoms of an allergic reaction. In addition it stimulates the production of gastric juices and dilates small vessels. Too much histamine will result in inflammation.

In the module on infectious diseases, a few of the physiological changes and symptoms caused by histamine were discussed. Now, we will go into more detail about the physiological changes and symptoms because histamine is released in a greater quantity in allergic reactions and therefore more symptoms are seen.

PHYSIOLOGICAL CHANGES	SYMPTOMS
1. Peripheral dilitation of capillaries in the skin.	A. Flushing of the skin. B. Edema and wheals develop.
2. Dilitation of cerebral arterioles and venules.	A. Headache.
3. General peripheral dilitation of arterioles and venules.	A. Pooling of blood in extremity. B. Decreased blood supply to heart. C. Decreased cardiac output to the vital organs. D. Decreased blood pressure, elevated pulse, increased and labored respiration. E. Decreased nervous function.
4. Smooth muscle stimulation.	A. Uterine contraction with lower abdominal cramping. B. Intestinal contractions with vomiting and diarrhea. C. Bronchial spasms with respiratory difficulty.

LEARNING ACTIVITIES - continued

PHYSIOLOGICAL CHANGES	SYMPTOMS
5. Exocrine (ductless) glands are stimulated.	A. Increased bronchial secretions. B. Increased gastric secretions. C. Increased lacrimations (tearing).
6. Increased permeability of capillaries (fluid and protein are able to leave the capillaries and go into the tissue).	A. Edema in tissue (example: puffy eyelids). B. Nasal congestion. C. Laryngeal congestion. D. Joint pains.

SUMMARY

Person sensitive to bee stings

+

Bee sting (allergen)

= Production of Antibodies

Bee/wasp sting + antibodies = cell destruction with the release of histamine

ACTIVITY #3. Detection and Desensitization of Allergic Reactions

Directions: Two basic tools determine if a patient has an allergy. Read the following information about these tools.

Elimination Diets:

When a person experiences allergic symptoms everyday, regardless of where the person is or what the weather is like, the physician may suspect a food allergy. The purpose of an elimination diet is to detect the food causing the daily reaction by the process of elimination. One method is eliminating all foods that commonly cause allergies from the starting diet. Only foods and fluids that are listed on the diet may be taken for two weeks. One new food, may then be added to the menu every three days. If symptoms reappear, it indicates that the new food is an allergic item. The second method is to have the patient keep a record of all food eaten for a given period. Then one food, such as milk, chocolate or wheat products, is eliminated from the diet. By gradually eliminating specific foods from the diet the food causing the allergy may be identified.

LEARNING ACTIVITIES - continued

Skin Test

Skin tests are used to determine an allergic reaction or sensitivity to allergens that are touched, inhaled or injected.

The three ways to administer a skin test are:

1. Scratch Test: Superficial scratches are made in rows on the patient's back and/or forearm and a different allergen is applied to each scratch.
2. Intradermal Test: A minute amount of allergen is injected just below the surface of the skin on the patient's back forearm using a TB syringe.
3. Patch Test: The suspected allergen is placed on a paper or cloth patch that is applied to the skin with tape and allowed to remain for 24 to 48 hours unless excessive itching and redness occur under the patch. Beware of tape allergies!!

If the skin test reacts with a wheal (hive) or redness in any of the three tests it is considered a positive response.

Safety Measure: Keep adrenalin and syringe available with a doctor's order for dosage.

Desensitization

Allergies cannot be cured! The best way to treat an allergy is to avoid the allergen! If this is impossible and the allergen is making life miserable, the patient may wish to be desensitized.

Desensitization is a process in which injections of the causative allergen are given to the patient every one to four weeks in increasing dosages.

Example:	1:100 dilution	
	0.1cc week	#1
	0.2cc	#2
	0.3cc	#3
	0.4cc	#4
	0.5cc	#5
	0.5cc	#6

This same scheduling is carried out for the 1:100 and 1:10 dilution. When the 0.5cc dose is reached, the interval between injections is increased to 10 days, 2 weeks, 3 weeks and 4 weeks. When the 4 weeks interval is reached, it is maintained for a prescribed period of time. Retest is then carried out for reevaluation purposes. Research has found that this stimulates the production of another antibody that neutralizes the usual reaction between the allergen and the antibody. Many people have to continue allergy shots for life, others may stop when they no longer need to worry about the allergic reaction. Desensitization has been most effective in hay fever.

LEARNING ACTIVITIES - continued

ACTIVITY #4. Serum Sickness

Directions: Read the following.

Serum sickness is an acute reaction following the injection of horse or rabbit serum found in many antiserums such as tetanus toxoids. The very first sign of a serum allergy is urticaria (hives) at the injection site. For this reason, a diluted dose of the horse or rabbit serum (e.g. 01 to .2 ml) should be given subdermally in the forearm before the ordered dose is given. If a rash appears at the injection site within 20 minutes or if the patient's eyes become red and itchy, it is considered a positive reaction and the physician should be notified immediately. The physician will probably order an oral antihistamine to relieve the mild discomfort of the rash.

Even though a test dose is given and the results are negative, the patient can still develop serum sickness. Many times the sickness will not appear immediately. The sickness may occur anytime from two hours to two weeks after the injection is given. The whole body responds by producing symptoms ranging from mild to severe depending upon the severity of the reaction.

Symptoms: Study the comparison between mild symptoms and severe symptoms.

Mild	Severe
1. Generalized rash	1. Purpura and lesions in visceral organs
2. Mild fever	2. Fever of 102°-103° for one week to ten days
3. Joint pain	3. Red and swollen joints
4. Local lymph node enlargement (those nearest injection)	4. Spleen and liver enlargement
5. Headache	5. Peripheral neuritis

Nausea, vomiting and diarrhea may accompany either type.

Treatment by the physician may include:

An antihistamine administered immediately by mouth if the reaction is mild and subcutaneously if the reaction is severe. With severe headache, joint pains and fever, aspirin and an analgesic may also be given.

Nursing Care

Discussion of nursing care for the urticaria will be discussed later in this module.

LEARNING ACTIVITIES - continued

ACTIVITY #5. Anaphylactic Shock of Anaphylaxis

Directions: Read the following information.

Anaphylactic shock is a sudden severe systemic reaction that can be life-threatening. Some people are so very sensitive to an allergen that when it is introduced immediate shock occurs. Shock caused by an allergic reaction is called anaphylactic shock.

Signs and symptoms:

1. Apprehension
2. Edema of the face, hands and then the whole body.
3. Itching at the throat, wheezing, violent cough, cyanosis and dyspnea.
4. Dilated pupils.
5. Rapid, weak pulse and decreased blood pressure.

The release of large amounts of histamine actually causes circulatory collapse and death may follow in a matter of minutes or hours.

Treatment by a physician may include:

1. Giving medication such as adrenalin (epinephrine, norepinephrine) or antihistamines (parenterally) to reverse the reaction.
2. Giving medication such as aminophylline to relieve breathing difficulty.
3. An emergency tracheotomy if breathing is still difficult.
4. Giving medication such as Levophed to raise the blood pressure and corticosteroids to help reduce the inflammatory reaction and aid in recovery.
5. Giving the usual treatment for any shock patient:
    a. elevate extremities.
    b. O_2 by mask.
    c. start an IV or increase the flow.
    d. warmth.

Once the patient's life is saved, the patient will need emotional support. Be sure the person is aware of the allergy!

LEARNING ACTIVITIES - continued

Prevention

There are two basic ways to help prevent anaphylactic shock. They are:

1. Good patient interview. When the patient is first admitted to the hospital, ask questions concerning allergies. If the patient has any, be sure to tag both the patient and the chart with those things the patient is allergic to.
2. Test dose of antiserum should be given to all patients, especially those who are already allergic to other things. People who have allergies are more apt to be allergic to other allergens.

If shock cannot be prevented, instant nursing action is required, followed by hours of accurate observations.

ACTIVITY #6. Hay Fever

Directions: Read the following.

Hay fever can best be defined as allergic rhinitis. Airborne pollens that are inhaled by sensitive people cause congestion of the nasal capillaries. This creates itching and edema of the nasal membrane accompanied by a watery discharge. The swelling may be so severe that the person is unable to breath through his/her nose. The patient may also experience violent attacks of sneezing. The eyes may be affected in much the same way, with reddening, itching and tearing. Light sensitivity may also occur.

The best treatment is to avoid the allergen; however, this is almost impossible even in Arizona. Next best would be the desensitization previously discussed. Antihistamine nose drops that dry up the secretions and eye washes that relieve the itching are often ordered by the physician for treatment of this allergy.

ACTIVITY #7. Bronchial Asthma

Directions: Read the following.

Untreated hay fever may eventually become asthma characterized by severe wheezing. Other causes of asthma besides inhaled pollen are food allergies, frequent respiratory infections, changes in the physical environment, such as increased humidity or dust, and changes in the emotional environment, such as stress or depression.

The emotional causes of asthma attacks should be neither overemphasized nor undermined. Once a person has had an asthma attack and discovers that it can be used to get out of an uncomfortable situation or to attract sympathetic attention, the person can will an attack to occur. After either the stress has been removed or the sympathy received, the attack will subside.

LEARNING ACTIVITIES - continued

Symptoms

The attack begins with a feeling of choking. Physiologically the bronchial mucosa becomes edematous. Bronchospasms are present and secretions become copious and thick. The patient has difficulty inhaling and exhaling because of the narrowing of the bronchioles. Cyanosis may develop and wheezing can be heard, especially upon exhalation.

Study the care plan outlined on the next page. Add any nursing approach you would use to the plan.

Patient Problem	Nursing Approach	Rationale
Difficulty breathing	Place patient in high Fowler's position.	Most patients use accessory muscles to breathe and can do this in high Fowler's position.
Dyspnea, Orthopnea	Have overhead table in position so patient can lean on it if desired.	Gives feeling of security. Patient may concentrate on breathing if the rest of the body is comfortable.
	Ideally, the nurse should know patients well enough to know exactly what position is preferred when experiencing an attack. Once discovered, it should be written on the Kardex for everyone to know.	
Increased anxiety	Remain with patient during entire attack.	The patient needs your support. For safety, the patient should not be left alone.
	Remain calm!	Feelings of anxiety are easily communicated. A calm, unruffled attitude is comforting to the patient.
	Ask all relatives and visitors to leave the room.	If the attack was brought on by stress from a visitor, remove the stress.

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale
Expectorating copious amounts of sputum	Have kleenex tissue and a wastebasket handy.	To contain the discharge.
	Keep suction available.	Patient may not be alert enough to expectorate voluntarily.
	Give good mouth care after an attack.	To remove odor and the slimy sensation from the mouth.
	Force fluids.	To help liquify secretions.
Exhausted and diaphoretic after attack has subsided.	Bathe and change linen as soon as possible.	To make patient more comfortable.
	Provide long periods of rest.	To replenish energy and to prevent exhaustion.

There is no cure for asthma. Avoiding the causative allergen or seeking psychological help to discover emotional causes may help control attacks. The use of drugs to dilate the bronchioles and to help liquify secretions may help terminate an attack. Some physicians and nurses claim that by taking control of the situation and ordering the patient to breathe slowly and with rhythm, they can stop an attack.

Know your patient!! Whatever works, do it!!

ACTIVITY #8. Status Asthmaticus

Directions: Read the following.

Asthma attacks may last for days. Sometimes asthma attacks last several days before the patient seeks help. After arriving at the hospital, the patient may be exhausted, dehydrated, malnourished and panic-stricken. The patient may die from heart failure before the attack subsides. Such a state is called status asthmaticus.

Given the above information, write a care plan for such a patient keeping all the systems (GI, urinary, etc.) in mind. After you have completed your care plan, discuss it with your instructor, individually or in a group. (Care-plan sheets are provided for you on the next two pages.)

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale

LEARNING ACTIVITIES - continued

Patient Problem	Nursing Approach	Rationale

LEARNING ACTIVITIES - continued

ACTIVITY #9. Urticaria

Directions: Read the following.

Remember, sensitive people respond to allergens in different ways. One response is a skin reaction called urticaria or hives. This symptom is usually seen after a patient has either eaten something or taken medication to which he/she is allergic.

Urticaria is characterized by edema, burning, itching and redness of the skin that is warm to the touch. The area affected may vary in size and shape. The urticaria may last for minutes or for days. Mucous membranes may also be affected producing problems with breathing or with GI irritations. The most common sites for hives are the lips, eyelids, hands, feet, genitalia and tongue.

The primary nursing concern for a patient with hives is to decrease the pruritis. If this is not done, the patient may scratch until the skin is broken; then, an infection may occur.

We have already identified the patient's problems as itching and scratching. Below and on the next page are suggestions for nursing approaches. Do a little research and write the rationale for each approach on the care plans provided. After completing the care plans, discuss them with your instructor.

Nursing Approach	Rationale
1. Trim fingernails short.	1.
2. Urge patient to press itchy area with fingertips rather than to scratch with fingernails.	2.
3. Suggest patient wear mittens at night.	3.
4. Suggest patient wear loosefitting clothing.	4.
5. Suggest patient wear cotton or silk instead of wool.	5.
6. Keep room temperature low and humidity high.	6.
7. Avoid any activities that will raise the patient's temperature.	7.
8. Avoid any activities that will cause patient to perspire.	8.

LEARNING ACTIVITIES - continued

Nursing Approach	Rationale
9. Apply cold, moist packs to itchy area.	9.
10. Offer colloid baths such as corn starch or oatmeal.	10.
11. Emollient baths may be helpful.	11.
12. Pat the patient dry after a bath, do not rub!!	12.
13. Give antihistamines as ordered.	13.
14. Offer sedatives if ordered PRN.	14.

ACTIVITY #10. Clinical Assignment

Directions: Read the following objectives that are specific to the care of a patient with allergic disorders. You are responsible for these, as well as the general clinical objectives, when assigned to such a patient.

Specific Clinical Objectives

To the instructor's satisfaction you will:

1. Provide nursing measures to alleviate:
    a. pain.
    b. pruritus.
    c. fear, anxiety.
2. Demonstrate nursing procedures for diagnostic tests for your assigned patients and determine if test results are within normal range. Include:
    a. Skin test
        (1) Scratch test
        (2) Intradermal
        (3) Patch test
    b. Elimination diet
    c. Desensitization

LEARNING ACTIVITIES - concluded

3. Demonstrate nursing care of patients with therapy specifically related to allergic conditions:
   - a. Colloid baths
   - b. Emollient baths
   - c. Open-cold, wet dressings (soaks or compresses).
4. Demonstrate teaching of patient and family:
   - a. Identifying causative factors.
   - b. Regarding controlled environment.
   - c. Regarding continued treatment.

unit 17

TERMINOLOGY

Most of the terms in this unit can be found in the previous units you have already studied, or they are defined in this unit. Therefore, this section will include definitions of the causes and types of illnesses and the definitions of body defenses. Any other unfamiliar terms can be looked up in Taber's Cyclopedic Medical Dictionary or any dictionary of your choice.

I. CAUSES OF ILLNESS

DISEASE:	A pathological condition of the body that presents a group of symptoms peculiar to it that set the condition apart as an abnormal entity differing from other normal body states. There are many different terms to describe diseases. Some of these terms and their definitions follow.
ACUTE:	Having a rapid onset and a relatively short duration.
CHRONIC:	A disease having a slow onset and lasting for a long period of time.
COMMUNICABLE:	A causative organism that is transmissible from one person to another either directly or indirectly through a carrier or vector.
CONGENITAL:	Present at birth but not always transmitted by the genes. It can result from some unfavorable event or from an unfortunate environmental condition experienced by the fetus during the period of pregnancy. Examples are: a. drugs b. radiation affecting the developing fetus.
CONTAGIOUS:	An infectious disease readily transmitted from one person to another.
DEFICIENCY:	A disease resulting from the lack of essential dietary substances required by cells for their normal function and maintenance. Examples are: a. scurvy—lack of vitamin C b. rickets—lack of vitamin D.
DEGENERATIVE:	A disease resulting from degenerative changes in tissues and organs, characteristic of old age.

TERMINOLOGY - continued

ENDEMIC:	A disease that is present more or less continuously in a community.
EPIDEMIC:	A disease that attacks a large number of individuals in a community at the same time.
FAMILIAL:	A disease occurring in several individuals of the same family.
FUNCTIONAL:	A disease in which no anatomical changes can be observed to account for the symptoms.
HEREDITARY:	From the moment of conception, the destiny of thousands of traits is decided. Some of these inherited traits can impair the function of the body, and the individual is born with hereditary disease or a tendency to develop it. Examples of inherited traits are: a. hemophilia. b. sickle cell anemia.
IDIOPATHIC:	A disease for which no causative factor can be recognized. Examples are: a. cancer. b. rheumatoid arthritis.
INFECTION:	The invasion of the body by an oganism that produces harm (pathogen). Because we do not live in a sterile environment, we are constantly bombarded by organisms, but we are not always sick. The chance of becoming infected depends on several factors such as: a. number of invading organisms. b. how virulent they are. c. resistance of host.
NEOPLASIA:	The new formation of abnormal tissue such as growths or tumors. These growths may be benign, or similar to the tissue in which they originate, or malignant and differing from the tissue of their origin. A benign tumor usually can be excised and it will not regrow. Malignant tumors (often called cancerous) metastasize (spread) to other parts of the body.

TERMINOLOGY - continued

OCCUPATIONAL:	A disease resulting from factors associated with the patient's occupation.
ORGANIC:	A disease resulting from recognizable anatomical changes in an organ or tissue of the body.
PANDEMIC:	An extremely widespread epidemic disease involving an entire country, continent or possibly the entire world.
PARASITIC:	A disease resulting from the growth and development of parasitic organisms (plants or animals) in or upon the body.
PSYCHOSOMATIC:	A disease in which structural changes in or malfunctioning of organs are due to the mind, especially the emotions.
SPORADIC:	A disease in which only occasional cases occur, not epidemic or endemic.
TRAUMA:	Both physical wounds and psychic wounds such as: a. injury in auto accident. b. loss of a loved one.
VENEREAL:	Disease including syphilis and gonorrhea that is usually acquired through sexual relations.

II. BODY DEFENSES

AUTONOMIC NERVOUS SYSTEM:	Provides an adjustment for body protection. Examples are: a. regulates sweating. b. speeds and slows heartbeats.
INFLAMMATORY RESPONSES:	The body reacts to any break in the tissue (from a cut, burn, bruise or a pinch) by becoming red and warm to the touch at the site. The cardinal symptoms of inflammation are: a. swelling. b. pain. c. redness. d. heat.

TERMINOLOGY - concluded

HYPERPLASIA:	This extra growth of normal tissue is a mysterious body asset resulting in hypertrophy (enlargement). Examples are: a. if one kidney is removed, the remaining kidney may enlarge increasing the amount of available kidney function. b. if one lung is removed, the remaining lung may enlarge increasing the capacity for the exchange of oxygen and carbon dioxide.
MAJOR INTERNAL DEFENSES:	These highly organized reactions are generated when the body is threatened. These reactions can originate in the endocrine glands, through their chemical messengers, the hormones. Examples are: a. adrenalin (epinephrine) is released when the body experiences sudden urgent distress. b. the body is prepared for "flight or fight" by the sympathetic division of the autonomic nervous system.
PROVISIONS AGAINST HAZARDS:	As long as skin remains intact, the body receives a major protection from invasion by organisms. Blinking and sneezing are two reflexes that guard the eyes and the respiratory system. Other examples are: a. the skull, which protects the delicate tissues of the brain. b. the rib cage, which protects the thoracic organs.
TISSUE REPAIR:	After damaged tissue is cleaned of debris, one of two types of repair will follow. They are: a. replacement with tissue identical with that destroyed. b. replacement with scar tissue.

POST TEST

Module A

Directions: The following multiple choice questions are designed to test your knowledge of the disease, disorders and appropriate nursing care for the musculoskeletal system. Select the one best answer of those provided and indicate the corresponding letter on your answer sheet. DO NOT WRITE ON THIS TEST.

Many injuries to the musculoskeletal system do not require hospitalization but do require outpatient treatment. The next three questions relate to these conditions.

1. Bursitis is an inflammation of the bursa. It may develop slowly due to:

   a. trauma.
   b. strain.
   c. bacteria.
   d. a & b
   e. a, b & c

2. Whiplash is a familiar injury, usually sustained in rearend collisions. The trauma to the neck muscles results from which motions?

   a. extension of the head too far backward
   b. flexion of the head too far forward
   c. extension of the head too far forward
   d. flexion of the head too far backward

3. If you sprained your ankle last night, your first action to reduce swelling would be:

   a. to apply ice for 2 hrs. intermittently.
   b. to do ROM, q4h.
   c. to wrap with adhesive.
   d. to rub with alcohol.

4. Your sprained ankle begins to swell and turn red. The swelling is probably caused by:

   a. hemorrhage.
   b. infection.
   c. not enough ice.
   d. an embolism.

POST TEST - continued

5. A patient with a broken ulna will experience pain in the:

   a. shoulder.
   b. face.
   c. back.
   d. forearm.

6. Mr. H. is a 40-year-old policeman hospitalized for a gunshot wound and fracture on the right humerus. He is right-handed. The next three questions relate to this condition. Gunshot wounds may produce a fracture referred to as:

   a. pathologic.
   b. greenstick.
   c. compound.
   d. orthopedic.

7. The fracture would be in the bone of the:

   a. upper arm.
   b. lower arm.
   c. thigh.
   d. ankle.

8. The greatest danger in the first-aid care of this type of fracture is:

   a. hemorrhage.
   b. infection.
   c. paralysis.
   d. displacement.

SITUATION:

J.P., a 26-year-old insurance salesman, fell from his horse and sustained a fracture that exposed his right radius. He was brought to the hospital where an open reduction of the fracture was performed. Following surgery, a cast was applied and he was admitted to the orthopedic unit once he was recovered from the anesthesia. The next five questions concern J.P.'s fracture.

9. During an open reduction:

   a. the physician moves and pulls the two bone fragments until they are in good alignment.
   b. the bone is directly manipulated into place during surgery.
   c. one applies traction to the area.
   d. the dietician instructs the patient on a diet to lose weight.

10. Which statement contains all the signs and symptoms of poor circulation to J.P.'s fingers.

   a. pink in color, edema and stain on the cast.
   b. stain on the cast, inability to move fingers, poor blanching.
   c. poor blanching, edema, numbness.
   d. numbness, paleness and foul odor from under the cast.

POST TEST - continued

11. The nature of J.P.'s fracture indicates that an open reduction is required before a cast is applied. When checking the casted arm you will not be upset by:

    a. unusual odor.
    b. sanguinous drainage.
    c. finger edema.
    d. paresthesia.

12. When J.P. comes back from surgery, his right arm should be:

    a. raised to heart level.
    b. covered with a sheet.
    c. across his chest.
    d. elevated on pillows.

13. J.P. tells you he can't move his fingers on the right hand. You know:

    a. this is the case with any fractured arm.
    b. he probably needs to be given physical therapy.
    c. to chart it and tell his physician tomorrow.
    d. it could mean the cast is too tight.

SITUATION:

Ms. E. is an 87-year-old retired algebra teacher who has been admitted to the orthopedic floor. She fell in her garden after she experienced sudden pain in her left hip. Her doctor says the x-rays show a fracture of the femur. The next six questions relate to her medical and nursing care.

14. Surgery cannot be done for two days because of some complicating factors related to other health problems Ms. E. has. Consequently the doctor applies Bucks traction to her left leg. Your nursing care will include:

    a. elevating the foot of the bed to give good alignment.
    b. rubbing the right thigh to promote good circulation.
    c. releasing the traction q6hs to check circulation.
    d. removing part of the weights to relieve her pain.

15. She was most likely admitted with a diagnosis of a:

    a. cracked patella.
    b. fracture of the left femur.
    c. slipped thoracic vertebrae.
    d. broken tibia.

16. The Buck's traction Ms. E. was placed on is:

    a. skeletal traction to the lower leg that must not be released.
    b. skin traction to the thigh, which should be released every four hours for skin care.
    c. skin traction to the lower leg, released every four hours for skin care.
    d. skeletal traction to the thigh that only the physician can release.

POST TEST - continued

17. There are several observations to be made about the skeletal traction used on Ms. E. What will you observe about the ropes and pulleys?

    a. how many pulleys there are
    b. the length of each segment
    c. how many knots have been used
    d. the condition of each segment

18. The Kardex indicates that pin care will be given qid. The care will include:

    a. observing for drainage.
    b. oiling each one with ointment.
    c. replacing them once a day.
    d. turning them one turn.

19. When Ms. E. was in surgery, the doctor applied a specific amount of weight to the left leg. Your responsibility to that weight is to:

    a. keep it free-hanging.
    b. increase when tolerated.
    c. reduce if she has pain.
    d. remove once each shift.

SITUATION:

Several months after J.P.'s accident, he suddenly developed severe pain in his right arm and a very high temperature. His doctor diagnosed osteomyelitis. He is admitted to the medical floor for treatment. The next four questions relate to this infectious process.

20. Two initial diagnostic exams that may be ordered for J.P. are:

    a. x-ray and wound biopsy.
    b. bone marrow and bone biopsy.
    c. white count and wound culture.
    d. complete blood count and calcium level.

21. The evening shift reported to you that J.P. refused to be turned at 2300 because of pain. They elected to medicate him and let him sleep. The activity order is to turn q2h. At 0100 you go to turn him, but he is resting quietly. You will:

    a. let him rest until the medication works fully.
    b. awaken him and ask if he wants to turn.
    c. help him turn when he wakes up.
    d. have your aide help you turn him now.

22. There is an isolation cart outside John's room but no indication of what type of isolation you are to use. You know the pathogen is staphylococcus aureus. What type of isolation technique will prevent the spread of this infection?

    a. reverse
    b. wound and skin
    c. enteric
    d. respiratory

POST TEST - continued

23. You see that J.P.'s menu for the next day is complete. As you look it over you see that he has not marked foods high in vitamin C and protein. Which foods would you encourage him to add?

    a. fish sticks and spinach
    b. meatloaf and broccoli
    c. bologna sandwich and a fresh orange
    d. deviled ham in a fresh tomato

SITUATION:

Mrs. Articulation, a 45-year-old mother of two school age children, has suffered from osteoarthritis of both hips and knees for some time. The next seven questions relate to this condition.

24. She has moist heat ordered for her elbows and her knees T.I.D. The best time to apply the heat is:

    a. early in the morning.
    b. before she exercises.
    c. after she exercises.
    d. after she has eaten.

25. All Mrs. Articulation wants for lunch is apple pie. You should:

    a. refuse her the pie until she has the liver and carrots.
    b. encourage her to first eat some of everything on her tray.
    c. say nothing since she is old enough to choose.
    d. tell her she can eat anything she desires.

26. As you care for Mrs. Articulation, you learn from her conversation that she is very tired of hurting all the time. She finally asks you what can be done for her. The best thing for you to say is:

    a. some people have been cured with the heat from natural mineral baths.
    b. although there is no cure, many drugs available can help.
    c. there are a few metals that help, one of which is copper worn as a bracelet.
    d. there are many treatments, a few of which can lead to a cure in time.

27. For a while Mrs. Articulation seems completely free of any symptoms. She doesn't even need much pain medication. You know this period is:

    a. a result of buildup of her medication.
    b. a sign that she may be cured.
    c. an exacerbation that will soon be over.
    d. a remission of her disease.

28. After Mrs. Articulation is through exercising, you should:

    a. call P.T. and say that she is ready for her treatments.
    b. take all joints through ROM to see how limber they are.
    c. provide her with rest before continuing with her daily care.
    d. suggest that she do exercises at least one more time.

POST TEST - continued

29. The scarring of the ligaments in Mrs. Articulation's knees and elbows can cause:
    - a. increased external rotation of the joint.
    - b. exacerbations.
    - c. ankylosis.
    - d. subluxation.

30. Mrs. A. wants to know why heat is applied to her joints. You tell her it is:
    - a. to loosen the tightness of the joints.
    - b. to prevent permanent contractures.
    - c. to improve the effectiveness of the meds.
    - d. to increase circulation to the area.

SITUATION:

Mrs. Articulation's physician decides to perform right hip replacement surgery. Mrs. A says she is ready for the surgery if it will relieve her pain. She returns to the surgical unit with an IV, a hemovac and Buck's traction to her right leg. The next five questions relate to her postop care.

31. The first day postop Mrs. Articulation may not be positioned in high Fowler's because:
    - a. the hemovac tube isn't long enough.
    - b. her hip may dislocate posteriorly.
    - c. she may become shocklike from blood loss.
    - d. it would change the effects of the traction.

32. To prevent skin breakdown, you are turning Mrs. Articulation every two hours. One of the special rules you are following is:
    - a. turn to the affected side only if three pillows are used.
    - b. turn to the left side with three pillows between her legs.
    - c. use trochanter rolls to maintain adduction at all times.
    - d. the abduction pillow may be removed only when she is supine.

33. Mrs. Articulation's husband wants to know why she has "that thing." He indicates the hemovac. You explain it will decrease the change of:
    - a. hematoma or abcess formation.
    - b. deep thrombosis formation.
    - c. irritation in the wound.
    - d. edema causing muscle spasms.

34. Mrs. A. tells you she dosen't really understand what happened to her during surgery. You tell her the surgeon replaced the head of the:
    - a. femur and the socket in the pelvis.
    - b. humerus and the trochanter joint.
    - c. fibula and the joint in the ischium.
    - d. tibia and the socket joint in the pelvis.

POST TEST - continued

35. A complication of Mrs. Articulation's surgery is:

    a. granulation.
    b. ossification.
    c. fatty emboli.
    d. paralysis.

SITUATION:

Mr. B., a 46-year-old miner is admitted to a medical unit with a grossly inflammed left great toe. His doctor suspects gouty arthritis. The next two questions relate to this condition.

36. To confirm a diagnosis of gout which test is done?

    a. uric acid
    b. creatine clearance
    c. white blood count
    d. hemoglobin

37. A severe complication of high uric acid blood level is:

    a. nephrosis.
    b. renal calculi.
    c. cholelithiasis.
    d. arteriosclerosis.

SITUATION:

Ms. C. is brought to the E.R. with a traumatic amputation of her left leg below the knee. She is 19 years old and has been working this summer in the wheat harvest to make money for her fall semester tuition fees at college. The next four questions relate to her immediate and near-term care.

38. Ms. C. went to the O.R. to have her leg revised to a closed stump. When she is brought to your floor, the recovery room nurse tells you the dresssing is about half-saturated with drainage and advises you to change it. The first thing you should do is:

    a. chart this information.
    b. call the doctor.
    c. reinforce it.
    d. change it.

39. For the first 24 hrs. postop, you will elevate her stump to prevent edema. After that time you will teach her to keep it flat when in bed. This is to:

    a. promote better drainage.
    b. not allow her to see it.
    c. reestablish circulation.
    d. prevent contractures.

POST TEST - concluded

40. Ms. C. is having a difficult time realizing and accepting what happened to her. You understand that she is grieving for her lost limb. Which would be the BEST course of action?

    a. Work the topic of conversation toward her amputation as often as possible.
    b. Arrange a visit from a Vietnam vet who is a bilateral amputee.
    c. Leave her in peace and quiet until she is ready to talk to you.
    d. Position the bedding so the stump is exposed and she will get used to seeing it.

41. Ms. C. says, "I know my left foot is gone, but it hurts." Your best response regarding the phantom pain will be:

    a. "The mind has a way of forgetting what is real if it wants to."
    b. "Why don't we wash your hair and take your mind off of it?"
    c. "Maybe if you look at the stump again, you will really see that your foot is gone."
    d. "It's been a while since your last pain med. I'll get some for you."

Directions: Match the phrase in Column I with the correct term in Column II by indicating the letter on your answer sheet that corresponds to the letter before the term you have chosen.

Column I	Column II
42. draw toward a center line	a. adduction
43. to increase an angle	b. extention
44. draw away from a center line	c. abduction
	d. flexion
45. decrease of symptoms	a. remission
46. increase in severity	b. atrophy
47. decrease in size	c. exacerbation
	d. degeneration
48. immobility of a joint	a. ankylosis
49. incomplete dislocation of a joint	b. subluxation
50. lateral curvature of the spine	c. lordosis
	d. scoliosis

ANSWERS TO POST TEST

Module A

1. e
2. a
3. a
4. a
5. d
6. c
7. c
8. a
9. b
10. c
11. b
12. d
13. d
14. c
15. b
16. a
17. d
18. a
19. a
20. c
21. d
22. b
23. b
24. b
25. b
26. b
27. d
28. c
29. d
30. d
31. b
32. b
33. a
34. a
35. c
36. a
37. b
38. c
39. d
40. b
41. d
42. a
43. b
44. c
45. a
46. c
47. b
48. a
49. b
50. d

POST TEST

Module B

Directions: Read the following multiple choice questions and answers completely. Then select the one best answer and indicate the corresponding letter on your answer sheet. DO NOT WRITE ON THIS TEST!

1. Your patient is one day postop. You turn her and find bright red drainage, her pulse is 120 and thready, BP 90/50, she is cool and clammy. You know blood is available for her in the blood bank. The nurse in charge is at lunch. What would you do?

   a. take her temp, start the blood and call the physician
   b. call the physician, call the nurse in charge and take her temp
   c. call the nurse in charge, notify the lab and take her temp
   d. call the family, take her temp and hang the blood

2. The blood is hanging and you are making observations for the first 15 minutes. You regulate the rate of the IV to:

   a. 10 gtts/min
   b. 15 gtts/min
   c. 20 gtts/min
   d. 25 gtts/min

3. Which would indicate that you should stop the infusion?

   a. chills, dyspnea, urticaria
   b. headache, dysuria, cyanosis
   c. shock, hypertension, vertigo
   d. hypotension, hematuria, syncope

4. The doctor arrives and confirms that the patient is in impending shock. What type of shock was she in?

   a. cardiogenic
   b. hypovolemic
   c. neurogenic
   d. hypervolemic

5. You know to keep the patient flat in bed until her condition stablizes. This is to:

   a. increase intracranial pressure
   b. prevent a decrease in respiration
   c. decrease bleeding
   d. decrease the pulse rate

POST TEST - continued

6. As her condition stablizes, the patient begins to complain of some things that you know are related to the shock condition. The complaints might be feelings of:

   a. hunger and warmness
   b. headache and nervousness
   c. nausea and sweatiness
   d. thirst and coolness

7. The patient developes a reaction to the blood. One of the symptoms is hematuria. Which type of specific reaction did the patient have?

   a. allergic
   b. hemolytic
   c. pyogenic
   d. anemic

The following are matching responses. Match the definition on the right column with the term on the left column, by circling on your answer sheet the correct letter.

8. ______ stenosis

9. ______ erythrocyte

10. _____ vertigo

11. ______ tachycardia

a. dizziness
b. fainting
c. rapid pulse
d. narrowing
e. white blood cells
f. red blood cells

12. In an outpatient clinic, Ms. Smith is told she is anemic. She asks you what that means. You tell her that her hemoglobin is probably:

   a. below 12%
   b. above 12%
   c. above 12 gms
   d. below 12 gms

13. Hemoglobin is responsible for:

   a. carrying iron
   b. carrying O_2
   c. carrying CO_2
   d. carrying protein

14. Pernicious anemia results from not enough:

   a. vit. B_6 and intrinsic factor
   b. vit. B_6 and extrinsic factor
   c. vit. B_{12} and extrinsic factor
   d. vit. B_{12} and intrinsic factor

POST TEST - continued

15. Mr. Jones, a 56-year-old business man, is admitted with a myocardia infarction. Blood tests are elevated. You know these will be:

    a. LDH and SGOT
    b. CPK and LDH
    c. ACTH and SGPT
    d. LDH and SMA

16. The doctor tells the patient he has "hardening of the arteries." You know this is technically called:

    a. arteriosclerosis
    b. atherosclerosis
    c. cholesterosis
    d. scoliosis

17. The patient is interested in finding out about cholesterol. You tell him the body makes it in the:

    a. spleen
    b. liver
    c. stomach lining
    d. aorta

18. Cholesterol is used by the body to make:

    a. hormones and urea
    b. intrinsic factor and RBC's
    c. the epidermis and phagocytes
    d. vitamin D and bile salts

19. A mother brings in her child with a severe sore throat. The child has been treated for strep throat in the past. You know that which condition may be caused by streptococcal infections?

    a. Ray-Naud's
    b. angina
    c. phlebitis
    d. endocarditis

20. Rheumatic heart disease is also caused by strep infections. Besides a sore throat and high fever, another sign is:

    a. cephalgia
    b. arthralgia
    c. phlebalgia
    d. neuralgia

POST TEST - continued

21. Part of the treatment for endocarditis and rheumatic heart disease is fluid balance. Which one nursing action will best help you monitor the fluid balance?

    a. taking the blood pressure
    b. recording daily intake
    c. doing a daily weight
    d. measuring daily output

22. Which electrolyte is most responsible for retaining fluids in the body?

    a. Na
    b. Cl
    c. K
    d. Fe

23. A 35-year-old woman is diagnosed as being hypertensive. The best example of her blood pressure would be:

    a. 150/86
    b. 110/90
    c. 162/94
    d. 148/72

24. Which symptoms would be most indicative of hypertension?

    a. polyphagia, polyuria, cephalgia
    b. angina, cardiomegaly, polydipsia
    c. nervousness, poor vision, apnea
    d. vertigo, nocturia, palpitations

25. CHF (congestive heart failure) leads to a decreased cardiac output. Ms. Keaton is admitted with this diagnosis. You would expect her to display which symptoms?

    a. ascites, apnea, palpitations
    b. pitting edema, dyspnea, rales
    c. cyanosis, nocturia, fatigue
    d. syncope, apprehension, pallor

26. To assist Ms. Keaton with her breathing difficulties, which positions would you choose?

    a. semi-Fowler's
    b. right Sims
    c. Trendelenberg
    d. lithotomy

POST TEST - continued

27. While providing Ms. Keaton with care, you will provide frequent rest periods, give complete baths and limit visitors because these will:

    a. increase oxygen supply
    b. limit your time with her
    c. reduce her anxiety level
    d. decrease oxygen demand

28. Ms. Keaton is placed on a low-sodium diet. Which foods will you help her avoid?

    a. celery and apples
    b. canned soup and instant tea
    c. pork and chicken
    d. watermelon and corn

SITUATION:

Cindy had a bilateral vein ligation and stripping. She has ace bandages from her toes to her thighs. Questions 29 and 30 relate to this situation.

29. In caring for Cindy, it is most important for you to take her:

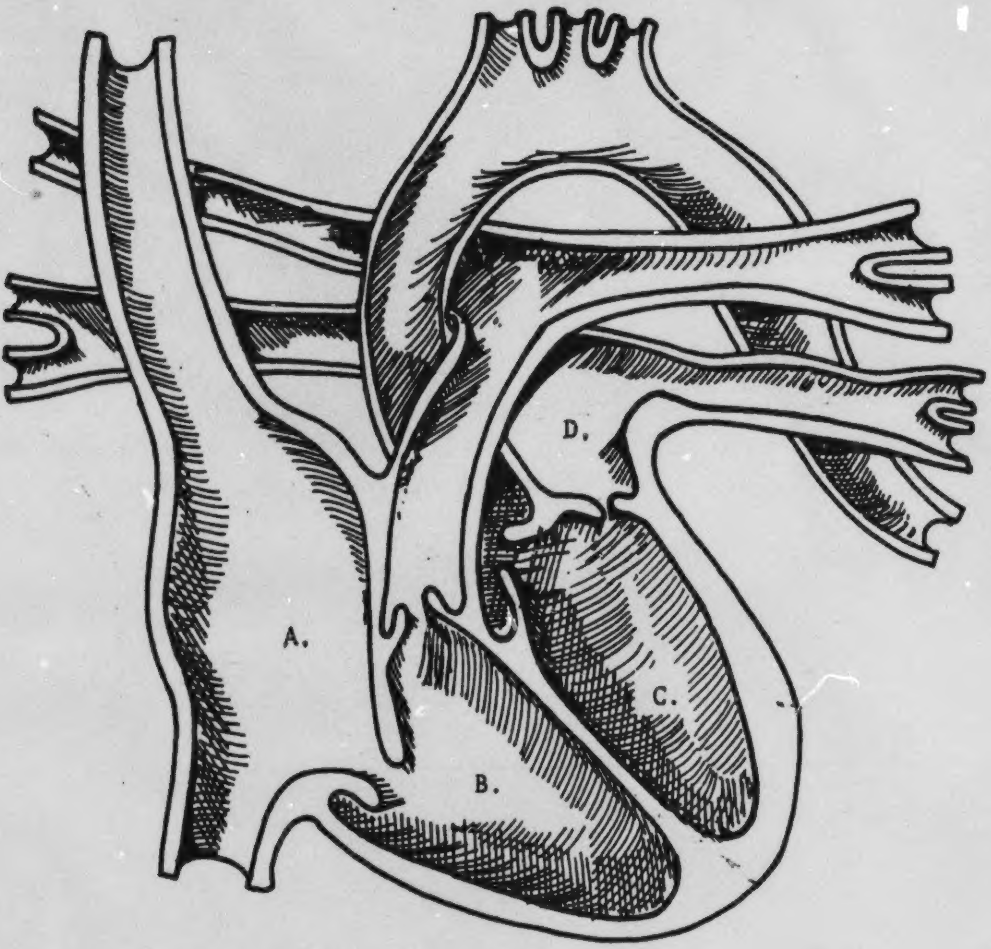
    a. popiteal pulse
    b. pedal pulse
    c. femoral pulse
    d. apical pulse

30. She will probably need the most assistance with:

    a. sitting in a chair
    b. turning in bed
    c. eating meals
    d. ambulating

POST TEST - continued

Directions: The following ten questions refer to the diagram of the heart. Select the letter on the diagram that indicates the area of the heart referred to in each question. Then indicate that letter on your answer sheet.



31. When the lungs are congested and begin to affect the heart, which chamber of the heart becomes congested first?

32. Blood returns to the heart from the lungs at:

33. Which letter indicates the most muscular chamber of the heart?

34. Blood returns from the left arm to the heart at:

35. Blood from the hepatic system enters the heart at:

36. The left artium is located at:

POST TEST - continued

37. A clot that enters the coronary arteries and causes a myocardial infarction is pumped from:

38. Unoxygenated blood is taken to the lungs by:

39. Mitral stenosis occurs at:

40. An aneurysm can be located at:

SITATION:

It is Mrs. Lopez's fourth postoperative day and she appears to be recovering without any complications. Suddenly, she complains of pain in her calf. She asks you what the symptoms of thrombophlebitis are. She tells you that her sister had it about ten years ago. Questions 41-43 relate to this situation.

41. You would tell her the symptoms are:

    a. redness, edema and numbness of the calf
    b. numbness, edema and coldness around the affected area
    c. tenderness, redness and swelling around the affected vein
    d. warmth, numbness and swelling of the involved vessel

42. When Mrs. Lopez states that is exactly the way her calf feels, you would:

    a. apply warm, moist packs to her calf
    b. gently rub her leg
    c. apply ice bags to her calf
    d. notify her physician stat

43. The physician's orders include "TED hose when ambulating". TED hose:

    a. prevent pooling of blood
    b. decrease the pain
    c. keep her affected leg warm
    d. increase circulation

44. A prolonged clotting time may be found in patients who:

    a. are hemophiliacs
    b. receive anticoagulants
    c. have thrombocytopenia
    d. all of the above

45. Angina is more likely to occur:

    a. while asleep
    b. after exercising
    c. after eating
    d. b & c
    e. all of the above

POST TEST - concluded

46. The pacemaker is located in the:
    - a. right atrium
    - b. left atrium
    - c. right ventricle
    - d. left ventricle

47. Aneurysms are best treated by:
    - a. vasoconstrictors
    - b. surgical removal
    - c. blood transfusions
    - d. pacemakers

48. Platelets are essential for:
    - a. protecting the body from pathogens
    - b. clotting of blood
    - c. transporting hormones
    - d. carrying nutrients

49. The heart contains:
    - a. 6 valves
    - b. 4 valves
    - c. 8 valves
    - d. 2 valves

50. A patient with blood type O may receive blood from:
    - a. Type A
    - b. Type B
    - c. Type AB
    - d. Type O

ANSWERS TO POST TEST

Module B

1. c
2. c
3. a
4. b
5. c
6. d
7. b
8. d
9. e
10. a
11. c
12. d
13. b
14. d
15. b
16. a
17. b
18. d
19. d
20. b
21. c
22. a
23. c
24. d
25. b
26. a
27. d
28. b
29. b
30. d
31. d
32. f
33. i
34. a
35. b
36. g
37. i
38. e
39. h
40. j
41. c
42. d
43. a
44. b
45. b
46. a
47. b
48. b
49. b
50. d

POST TEST

Module C

Directions: Read the following multiple choice questions and all answers completely. Then select the one best answer and indicate the corresponding letter on your answer sheet.

SITUATION:

Mr. Blue, 62-year-old coal miner, developed emphysema as a result of his occupation. He is dyspneic, lethargic and underweight. The next five questions relate to his condition and nursing care.

1. Mr. Blue's wife doesn't seem to understand exactly what is wrong with her husband. You can tell her that emphysema is a lung condition in which the:

    a. trachea becomes chronically inflamed.
    b. alveoli lose their elasticity.
    c. bronchioles overexpand.
    d. bronchi are congested with phlegm.

2. As the emphysema continues to advance, the heart is affected. Which indicates that cardiac condition?

    a. right-sided heart failure
    b. mitral stenosis
    c. myocardial infarction
    d. angina pectoris

3. To facilitate breathing, Mr. Blue should:

    a. inhale while leaning forward and slowly standing up.
    b. inhale twice as long as he exhales.
    c. inhale through his nose and exhale through his mouth.
    d. inhale and exhale through his mouth with his lips apart.

4. Mr. Blue asks you to turn on his oxygen. Which rate per min. is the best for him?

    a. 2 liters
    b. 4 liters
    c. 6 liters
    d. 8 liters

5. Mr. Blue's doctor orders arterial blood gases drawn (ABG's). The normal values are:

    a. $p0_2$ - 100 mg Hg
    b. $pC0_2$ - 10 mg Hg
    c. $pC0_2$ - 90 mg Hg
    d. $p0_2$ - 50 mg Hg

POST TEST - continued

SITUATION:

Elwin Tewa is a 26-year-old long distance runner. One evening he was running near some construction. He could not see well and ran too close to a trench that was being prepared for cement footing. He fell in the trench and onto an iron rod sticking out of the ground. The iron rod pierced his right chest and lung. The following four questions relate to the resulting pneumothorax and nursing care.

6. Due to Mr. Tewa's condition, you would expect his

   a. pulse to be slower, respirations to be elevated.
   b. pulse, respirations and blood pressure to be elevated.
   c. blood pressure to be elevated, respirations to be slower.
   d. blood pressure to be lower, respirations to be elevated.

7. When the iron rod went through his chest wall and lung, the lung collapsed because:

   a. hemorrhage caused a state of shock.
   b. of spasms of the intercostal muscles.
   c. the positive pressure was eliminated.
   d. air leaked in the pleural cavity.

8. Two chest tubes are inserted in Mr. Tewa's right thorax. The tube that is placed near the apex of his lung will have a return of mainly:

   a. serum.
   b. mucus.
   c. blood.
   d. air.

9. "Milking" or "stripping" the chest tube is done primarily to:

   a. avoid backflow of fluid into the pleural space.
   b. maintain patency of the drainage tube.
   c. prevent kinking of the air vent tube.
   d. reestablish negative intrapleural pressure.

SITUATION:

Bertha Brown is a 91-year-old retired LPN. She went to visit her 70-year-old son in Minnesota for Christmas. While there she contracted a bacterial pneumonia. The next five questions relate to her condition and nursing care.

10. Pneumonia is best described as:

    a. an infection of the alveoli.
    b. an inflammation of the bronchioles.
    c. an infection of the pleura.

POST TEST - continued

11. All of the medical or nursing actions listed below would help relieve Ms. Brown's chest pain EXCEPT:

    a. splinting her chest.
    b. Empirin #2 q4h.
    c. an oxygen tent.
    d. bronchial suctioning.

12. Symptoms of pneumonia she may experience are:

    a. lethargy, a dry and irritating cough and chest pain.
    b. chest pain, rapid pulse and respirations and chills.
    c. slow pulse and respirations, fever of 104° F to 106° F.
    d. depression, rapid pulse and fever of 99° F to 100° F.

13. She is expectorating tenacious sputum. The physician will not order:

    a. an analgesic.
    b. an antibiotic.
    c. a cough suppressant.
    d. a cough expectorant.

14. You may treat Ms. Brown's condition by:

    a. giving her O_2.
    b. pushing fluids.
    c. giving analgesics.
    d. having her cough and deep breathe frequently.
    e. all of the above.

SITUATION:

Trish Miller is a 35-year-old who has returned to your unit following a colectomy. You know that part of your responsibility is to prevent some complications and to observe for others. The next six questions relate to two of these complications.

15. Ms. Miller's physician's postop orders include TCDB (turn, cough and deep breathe) q2hr. Which complication will this help prevent?

    a. thrombosis
    b. pleurisy
    c. atelectasis
    d. empyema

16. The condition in the previous question can be prevented by:

    a. following the doctor's orders.
    b. giving lots of fluids.
    c. giving analgesics.
    d. doing what the patient wants.

POST TEST - continued

17. Which is NOT a cause of this condition?

    a. air in the pleural cavity
    b. fluid in the pleural cavity
    c. an obstruction of the bronchioles
    d. pulmonary edema

18. Trish Miller suddenly develops a rapid pulse, mild dyspnea, mild substernal pain and hemoptysis. These symptoms suggest that she may have:

    a. bronchiectasis.
    b. pneumothorax.
    c. pleurisy.
    d. pulmonary emboli.

19. Your first nursing action will be to:

    a. ask her to stay in bed until her doctor arrives.
    b. tell her these things happen sometimes.
    c. request that the nurse in charge move her to ICU.
    d. chart all the symptoms in your nursing notes.

20. Due to this condition, the area of the lung affected becomes necrotic, which means that the tissue:

    a. dies because of a lack of blood supply.
    b. becomes edematous.
    c. becomes engorged with blood.
    d. becomes fibrous.

SITUATION:

Mr. Mohrland has been a heavy smoker for many years. For the past five years he has grown progressively more hoarse. When he finally consulted his doctor, he was told he had cancer of the larynx. A laryngectomy was performed. He is now two days postop and is being transferred to your unit. He has a tracheostomy and an N.G. tube. The next six questions relate to his postop care.

21. You will be caring for the tracheostomy tube once on your shift. You learned that your care will include cleaning:

    a. the outer cannula.
    b. both cannulas.
    c. the inner cannula.

POST TEST - continued

22. You notice that Mr. Mohrland has an unusual amount of secretions. You know that this is because the trachea is irritated by the:
    - a. repeated suctioning.
    - b. lint on the dressings.
    - c. tracheostomy tube.
    - d. internal stitches.

23. When you are suctioning Mr. M's trach you will:
    - a. apply suction at least one full minute.
    - b. suction when entering the trach.
    - c. use a medically clean technique.
    - d. wait three minutes between suctioning.

24. The nasogastric (N.G.) tube was put in during surgery in order to allow you to:
    - a. decompress the stomach.
    - b. prevent nausea.
    - c. do tube feedings.
    - d. prevent an ileus.

25. The tracheostomy tube consists of these parts:
    - a. the outer cannula, inner cannula and obturator.
    - b. the outer cannula and inner cannula.
    - c. the obturator and inner cannula.
    - d. suction equipment, sterile dressing and tracheostomy dialator.

26. The primary nursing responsibility is:
    - a. trach care every shift.
    - b. to keep the airway open.
    - c. to prevent infection.
    - d. to show the patient how to do his own care.

SITUATION:

Mrs. Wilson, a 58-year-old smoker, has increasing dyspnea and a continuous, hacking cough. Her doctor admits her for tests. The next eight questions relate to her diagnosis and treatment and related nursing care.

27. PA and lateral chest x-ray are ordered and taken. They reveal pleural effusion. The doctor elects to do a thorocentesis. This procedure is done to:
    - a. inject medication.
    - b. remove fluid.
    - c. take a biopsy.
    - d. instill special dye.

POST TEST - continued

28. Nursing observations after a thoracentesis include:

    a. coughing.
    b. dyspnea.
    c. higher anxiety level.
    d. higher temperature.

29. The chest x-ray also revealed a lung mass in the apex of the left lung. A bronchoscopy is scheduled. In this situation this procedure is to:

    a. inject dye for a bronchogram.
    b. remove as much of the mass as possible.
    c. evaluate the oxygen level.
    d. obtain a biopsy specimen.

30. If oral fluids are given before the anesthetic is worn off following the bronchoscopy, the patient is likely to:

    a. choke.
    b. vomit.
    c. wheeze.
    d. cough.

31. Since the results of all the tests demonstrate bronchogenic carcinoma, a pneumonectomy will be performed. Which will NOT be present when she returns from surgery?

    a. chest tubes
    b. intravenous
    c. penrose drain
    d. oxygen

32. Nursing care of a patient with chest tubes includes:

    a. placing in a prone position.
    b. passive ROM day of surgery.
    c. bronchial suctioning.
    d. trach care.

33. One of the postop orders for Mrs. W. is to TCDB q2h at the odd hour. You know she will have considerable pain. To minimize it as much as possible you will:

    a. provide fluids to liquify the secretions and apply pressure while she coughs.
    b. give her pain medication on the even hours and give her oxygen.
    c. have her stand at the bedside and splint the incision with a blanket.
    d. raise the head of the bed and have her lie in left Sims.

POST TEST - continued

34. As Mrs. Wilson is recovering and beginning to ambulate, she favors the operative side. An exercise that might help her would be for her to:
    a. reach up and behind her shoulders.
    b. push shoulders back and bring the scapula as close as possible.
    c. stretch high out in front of her.
    d. hold her arms straight out and rotate them.

35. During respiration, the exchange of gases occurs in the:
    a. bronchioles.
    b. pulmonary artery.
    c. alveoli.
    d. pharynx.

36. The control center for respirations is the:
    a. medulla.
    b. cerebellum.
    c. cerebrum.
    d. thymus.

37. The gas that stimulates the control center for respirations is:
    a. oxygen.
    b. carbon dioxide.
    c. hydrogen.
    d. nitrogen.

38. Vital capacity refers to the:
    a. smallest amount of air the lungs can hold.
    b. largest amount of air the lungs can hold.
    c. amount of air exchanged in a normal respiration.
    d. none of the above.

SITUATION:

You are assigned to admit Mr. Wong, a 50-year-old patient of Doctor Lopez. As you enter the room, you find Mr. Wong sitting on the edge of the chair having a difficult time breathing. You remember that the admission sheet stated Mr. Wong had a C.O.P.D. This admission diagnosis means that he has had respiratory difficulties for a long time; however, no specific diagnosis has been made. Questions 39 to 46 relate to this situation.

39. Your first concern in helping Mr. Wong get comfortable would be to put him in which position?
    a. supine
    b. Trendelenberg
    c. Fowler's
    d. prone

POST TEST - continued

40. Mr. Wong is scheduled for a bronchogram in the morning. While explaining the procedure to him, you would tell him all of the following except:

    a. "You will be lying on a table that will be tilted in various positions."
    b. "The physician will insert a metal cannula into your mouth down to your throat."
    c. "This procedure is performed under general anesthesia."
    d. "A liquid will be injected into your bronchi and bronchioles."

41. Following the bronchogram, Mr. Wong returns to his room. You will:

    a. force fluids to help him expectorate the dye.
    b. offer only solid foods because they are easier to swallow.
    c. check for excessive bleeding at the tracheotomy site.
    d. check for the gag reflex to return before offering fluids.

42. The bronchogram showed that Mr. Wong's alveoli and bronchioles were hyperextended at all times. His diagnosis is:

    a. chronic bronchitis.
    b. emphysema.
    c. acute bronchitis.
    d. asthma.

43. C.O.P.D. means:

    a. chronic obstructive postural drainage.
    b. chronic obstructive lung disease.
    c. chronic obstructive pulmonary discomfort.
    d. chronic obstructive pulmonary disease.

44. Mr. Wong probably has difficulty eating large meals because:

    a. eating is fatiguing.
    b. his stomach is smaller.
    c. he has overeaten.
    d. CHO causes dyspnea.

45. Mr. Wong should drink plenty of liquids to:

    a. keep his mouth clean and fresh.
    b. prevent pulmonary emboli from developing.
    c. help keep the respiratory secretions liquified.
    d. make sure the kidneys continue to function.

46. A severe complication of Mr. Wong's condition is:

    a. left-sided heart failure.
    b. ascites and varicosities.
    c. cancer of the lung.
    d. right-sided heart failure.

POST TEST - concluded

Directions: Match the following terms in Column I with the correct definition in Column II by indicating the letter on your answer sheet that corresponds to the letter before the term you have chosen.

Column I

47. Epitaxis

48. Hemoptysis

49. Pneumonectomy

50. Lobectomy

Column II

a. lack of breathing

b. bloody phlegm

c. removal of a lobe of a lung

d. nose bleed

e. removal of an entire lung

ANSWERS TO POST TEST

Module C

1. b
2. a
3. c
4. a
5. a
6. d
7. d
8. d
9. b
10. a
11. d
12. b
13. c
14. e
15. c
16. a
17. d
18. d
19. a
20. a
21. c
22. c
23. d
24. c
25. a
26. b
27. b
28. c
29. d
30. a
31. c
32. b
33. d
34. b
35. c
36. a
37. b
38. b
39. c
40. c
41. d
42. b
43. c
44. a
45. c
46. d
47. d
48. b
49. e
50. c

POST TEST

Module D

Directions: The following questions test your knowledge of exams, diseases and disorders of the G.I. system. Select the one best answer of those provided and indicate the corresponding letter on your answer sheet.

1. A gastric gavage may be performed for a patient who has:

   a. constipation.
   b. anorexia.
   c. polyphagia.
   d. dyspnea.

2. What problem can occur if barium is not completely expelled soon after the x-ray?

   a. constipation
   b. diarrhea
   c. G.I. bleeding
   d. gallstones

3. In order to prevent an intestinal obstruction from the barium used to do G.I. x-rays, which catagories of medications might be given?

   a. emetics
   b. cathartics
   c. hematinics
   d. diuretics

4. All patients would receive at least one enema in preparation for all of the following EXCEPT:

   a. sigmoidoscopy.
   b. colonoscopy.
   c. proctoscopy.
   d. gastroscopy.

5. A stool specimen must be sent to the lab for O & P:

   a. immediately.
   b. in six hours.
   c. in one hour.

POST TEST - continued

6. The patient preparation for a gastric analysis includes:

   a. passing a N.G. tube to the stomach 12 hrs. before the procedure.
   b. requesting that the patient completely empty his or her bladder.
   c. getting the patient to sign a permit before going to radiology.
   d. withholding food for 12 hours before the procedure is scheduled.

7. A biopsy may not be performed with which examination?

   a. proctoscopy
   b. esophagoscopy
   c. duchoscopy
   d. gastroscopy

8. An esophagoscopy is performed so the physician can visualize the esophageal lining. After this procedure, the most critical order will be:

   a. NPO for 1 hour.
   b. BRP in 4 hours.
   c. BRP in 8 hours.
   d. NPO for 12 hours.

Directions: Match the phrase in Column I with the correct term from Column II by indicating the letter on your answer sheet that corresponds to the letter before the term you have chosen.

	Column I		Column II
9.	membrane lining the abdominal cavity	a.	omentum
10.	joining two parts together	b.	anastomosis
		c.	perineum
		d.	peritoneum
		e.	intussusception stomatitis
11.	inflammation of the stomach	a.	gastric gavage
12.	washing-out of the stomach	b.	gastric lavage
		c.	gastritis
13.	organ that manufactures bile	a.	perforation
14.	projections of a loop of an organ through the wall of a cavity	b.	liver
		c.	gallbladder
		d.	hernia
15.	difficulty swallowing	a.	dysphasia
16.	most common gastric decompression tube	b.	dysphagia
17.	loss of appetite	c.	Miller-Abbott
		d.	Jackson Pratt
		e.	anorexia

POST TEST - continued

Column I	Column II
18. alternate contraction and relaxation of the G.I. tract	a. hematemesis
19. vomiting blood	b. peristalsis
	c. valvulus
	d. hematosepsis

Directions: For the last part of this test, read the situations and answer the questions following each situation. Indicate the one best answer on your answer sheet.

SITUATION:

Rick Kennedy was 21 last Monday. He is a senior in college, is 6'3" tall and weighs 165 pounds. He was out drinking with his buddies after a midterm exam when he became ill and began vomiting blood. On admission to the emergency room, a diagnosis of a bleeding peptic ulcer was made. Questions 20 and 21 relate to this situation.

20. You would suspect that Mr. Kennedy has been having stomach pain:

    a. 2 hrs p̄ eating

    b. right p̄ eating

    c. right ā eating

    d. while eating

21. You know that the stomach pain is probably caused by too much hydrochloric acid in the stomach. This acid is used to digest:

    a. fat.
    b. protein.
    c. carbohydrates.

Directions: On occasion, gastric ulcers, one of two types of peptic ulcers, cannot be treated by medical means. In those cases, the stomach is surgically removed. These patients may return with either a gastrostomy tube or a N.G. feeding tube. The next six questions refer to this situation.

22. The patient returns with a gastrostomy tube as well as an IV. You hear bowel sounds on the fourth postop day. You will expect the doctor to clamp the gastrostomy tube and:

    a. order a regular diet.
    b. increase the IV rate.
    c. order clear liquids.
    d. discontinue the IV.

POST TEST - continued

23. You are giving small tube feedings to a post-gastrectomy patient via a nasogastric tube. You will check the position of the tube by:

    a. taking an x-ray just before feeding.
    b. starting the feeding anyway.
    c. injecting air while listening with your stethoscope.
    d. instilling 30 cc water to clear the tube first.

24. Which is not a probable cause of Rick Kennedy's bleeding ulcer?

    a. anxiety
    b. heredity
    c. alcoholism
    d. malnutrition

25. A nursing care approach you would take when caring for Rick Kennedy and his N.G. tube (which is irritating his throat) is to allow him to:

    a. swab his throat with glycerine.
    b. take fluids sparingly.
    c. suck on some ice chips.
    d. gargle with a warm saline solution.

26. After the nasogastric tube is removed, Mr. Kennedy is placed on a bland diet. Which meal would be best for him?

    a. chipped beef over toast points, relish plate, apple pie and tea
    b. lean roast beef, mashed potatoes, peas and plain applesauce
    c. roast chicken, mashed potatoes with gravy, peas, skim milk and chocolate cake
    d. baked pork chop, mashed potatoes, green salad and buttermilk

27. When explaining to Rick Kennedy ways in which he could "be kind" to his stomach, you would tell him to:

    a. eat only three meals a day.
    b. drink hot or cold fluids P.R.N.
    c. drink alcohol to help him relax.
    d. ventilate stressful feelings.

Directions: Many people experience inflammatory conditions of the intestines. The next two questions relate to two such conditions.

28. With enteritis, the patient may have:

    a. some nausea with frequent watery stools.
    b. a moderate fever with mild diarrhea.
    c. frequent watery stools with low-grade fever.
    d. mild diarrhea with mild cramping.

POST TEST - continued

29. A patient with colitis has several loose, watery stools a day. Your nursing approach will include diet therapy. Which regimes would be best?

    a. four meals of similar size preceded by Peri-colace
    b. three regular meals including Raisin Bran for breakfast
    c. five medium feedings followed by Metamucil
    d. six small feedings including an eggnog at 10:00 each a.m.

SITUATION:

Mrs. Pen is a 49-year-old woman admitted to the hospital with a diagnosis of an intestinal obstruction due to a cancerous tumor. Questions 30 through 38 relate to this situation.

30. An intestinal obstruction can be caused by many occurances. Which would NOT be a contributor to the formation of an obstruction?

    a. a cancerous tumor
    b. an electrolyte imbalance
    c. an ulcer
    d. an adhesion

31. Symptoms of an intestinal obstruction are:

    a. diarrhea, confusion and weakness.
    b. abdominal cramping and paralytic ileus.
    c. abdominal distention, cramping and vomiting.
    d. abdominal cramping, diarrhea and elevated pulse.

32. Medical treatment for Mrs. Pen should include:

    a. Miller-Abbott tube and gastric lavage.
    b. tidal wave enema and gastric gavage.
    c. rectal tube and Miller-Abbott tube.
    d. fleets phosphosoda and IV therapy.

33. Mrs. Pen experiences dyspnea when she is placed in a supine position. This is caused by her distended abdomen. You can help her alleviate this dysnea by:

    a. encouraging her to breathe through her nose.
    b. repositioning her to a semi-Fowler's position.
    c. providing a straw when she drinks fluids.
    d. giving a soapsuds enema twice a day.

34. The physician suggests that the descending colon to the anus be removed and an opening from the bowel be brought to the abdominal wall. This would be a:

    a. permanent ileostomy.
    b. temporary colostomy.
    c. permanent colostomy.
    d. temporary ileostomy.

POST TEST - continued

35. When part of the intestines are removed surgically, an --ostomy is made. Intestinal content will be expelled through this opening. There is only one that is irrigated. That is the:

    a. colostomy.
    b. ileostomy.

36. On return from surgery you notice that Mrs. Pen already has a plastic bag over her stoma. In caring for her, you would empty the bag:

    a. only if the doctor orders.
    b. when it is 3/4s full.
    c. using sterile technique.
    d. using clean technique.

37. As the days pass following her surgery, Mrs. Pen continues to avoid looking at the stoma and refuses to help care for it. The best nursing action would be to:

    a. not change the bag again until she states she is willing to help.
    b. advise her doctor of her reluctance and let her handle it.
    c. find someone else on your shift to give her colostomy care.
    d. ask members of her family to change it since they will be doing it anyway.

38. When Mrs. Pen helps you change her bag, be sure that she:

    a. writes her questions as she thinks of them.
    b. discards the old bag in the wastebasket.
    c. has an opportunity to wash her hands.
    d. reads the doctor's orders first.

SITUATION:

Mrs. Fair is a 38-year-old woman admitted to the hospital with severe pain in the right upper quadrant of her abdomen, nausea and vomiting and an elevated temperature. On admission, she states she ate three tacos and a large bowl of meatball soup two hours before the severe pain started. She has had similar attacks before, which always occur after eating a large meal. The diagnosis of cholecystitis was made by the physician. Questions 39 through 45 relate to this situation.

39. Cholecystitis is:

    a. an inflammation of the liver cells.
    b. an infection of the biliary tract.
    c. an infection of the bile duct.
    d. an inflammation of the gallbladder.

POST TEST - continued

40. Mrs. Fair asks you what causes the severe pain in her side. Your best response would be to tell her that it is caused by:

    a. spasms in the gallbladder and biliary tract.
    b. pressure on other organs around the gallbladder.
    c. spasms of the biliary and hepatic ducts.
    d. pressure of the diaphragm on the gallbladder.

41. Mrs. Fair asks you where bile comes from. Your best response would be to tell her that bile:

    a. comes from the pancreas and is stored in the gallbladder.
    b. comes from the liver and emulsifies carbohydrates.
    c. is made in the liver and stored in the gallbladder.
    d. is made in the gallbladder.

42. You also explain that the bile travels through the common bile duct and passes into the:

    a. pancreas.
    b. liver.
    c. duodenum.
    d. ileum.

43. Once Mrs. Fair is no longer nauseated, she will probably have:

    a. a gallbladder biopsy.
    b. hepatic exploration.
    c. blood work drawn.
    d. a cholecystogram.

44. The physician suggests that Mrs. Fair have a cholecystectomy with an exploration of the common bile duct. On return from surgery you see that she has a T-tube and a bile bag. With the T-tube you would expect:

    a. much inflammation around the tube sight.
    b. to change the bile bag about qh4 - PRN.
    c. much drainage in the bag for the first week.
    d. drainage on the dressing the first few days.

45. Mrs. Fair has an order to ambulate qid the first day postop. She states that she is too tired to ambulate in the a.m. Your best response would be to:

    a. let her rest until she is ready to ambulate, as long as she walks four times before 1500.
    b. explain that she can sit in a chair at the end of the hall before returning to her room.
    c. assure her that you and another person will help her to walk even if she can only take a few steps.
    d. tell her that her physician said she had to walk; therefore, she must walk four times today.

POST TEST - concluded

SITUATION:

Mrs. Tang is a 45-year-old Chinese woman who is visiting her daughter in the United States for the first time. After three weeks, she becomes weak and nauseated and it is discovered that she has hepatitis. Questions 46 through 50 relate to this situation.

46. A blood test that Mrs. Tang's physician would NOT order if hepatitis is suspected is a:

    a. BUN.
    b. LDH.
    c. SGOT.
    d. WBC.

47. When evaluating Mrs. Tang's degree of jaundice, you would check the color of her:

    a. abdomen.
    b. palms.
    c. sclera.
    d. gums.

48. You would expect the color of Mrs. Tang's urine to be:

    a. brown.
    b. yellow.
    c. amber.
    d. pink.

49. Along with jaundice, she has pruritus. This is caused by:

    a. bile deposited on the skin through perspiration.
    b. medication she is receiving for the nausea.
    c. histamine deposits and dehydration.
    d. the bile backed up in her liver.

50. The best nursing care for the pruritus is to:

    a. apply calamine lotion to the places where it itches.
    b. bathe her frequently with phisohex in sodium chloride.
    c. divert her attention to help her ignore the itching.
    d. give her frequent baths with septi-soft.

ANSWERS TO POST TEST

Module D

1. b
2. a
3. b
4. d
5. a
6. d
7. c
8. a
9. d
10. b
11. c
12. b
13. b
14. d
15. b
16. c
17. e
18. b
19. a
20. a
21. b
22. c
23. c
24. d
25. d
26. b
27. d
28. b
29. d
30. c
31. c
32. c
33. b
34. c
35. a
36. d
37. b
38. c
39. d
40. a
41. c
42. c
43. d
44. c
45. c
46. a
47. c
48. a
49. a
50. d

POST TEST

Module E

Directions: Match the following prefixes with the appropriate definition by indicating on your answer sheet the correct corresponding letter. DO NOT WRITE ON THIS EXAM.

1. with sugar
2. with pus
3. with blood

a. glycos -
b. albu -
c. hema -
d. py -

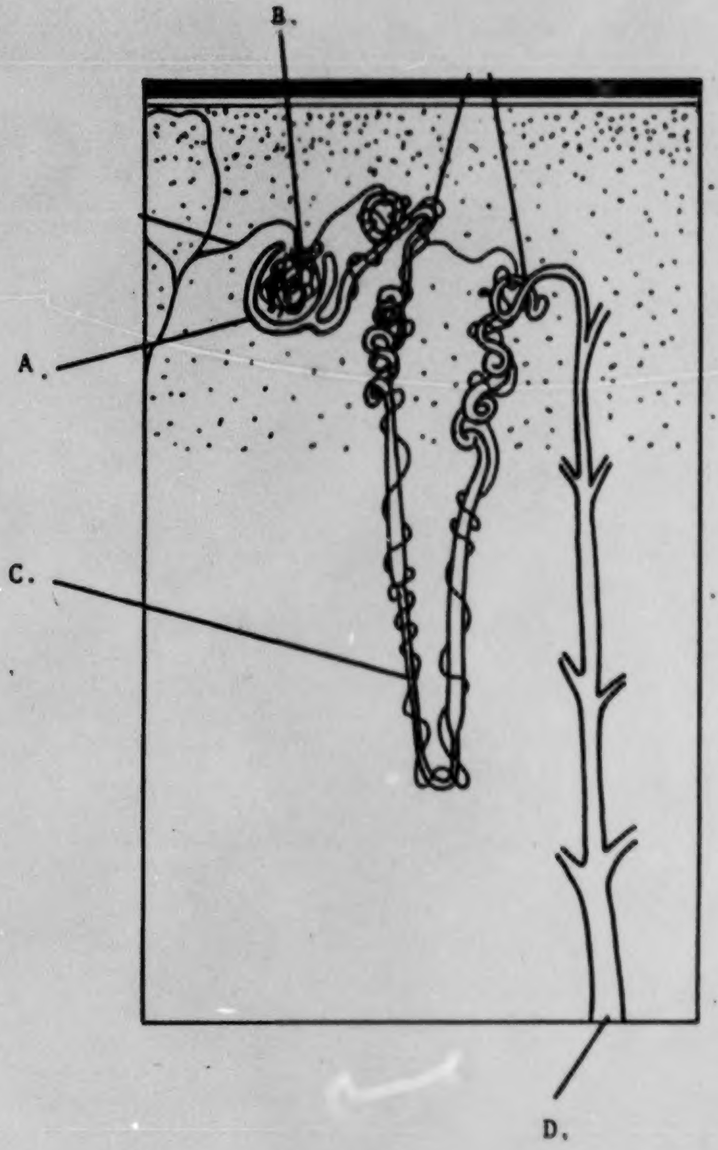
4. 0 - 100cc/24°
5. 100 - 1000cc/24°
6. 3000 - 5000cc/24°

a. noct -
b. an -
c. olig -
d. poly -

Directions: Using the diagram of a simplified nephron, select the area indicated by a letter that correctly answers the following questions.

7. The loop of Henle is located: ____________________
8. What part is affected in Bright's disease? ____________________
9. Where would a renal calculus be most likely to lodge? ____________________
10. Where does filtration take place? ____________________
11. Where does the urine pass to the bladder? ____________________

POST TEST - continued



Nephron

POST TEST - continued

Directions: Indicate which of the multiple choice answers is correct by marking the corresponding letter on your answer sheet.

12. The urine retained by the bladder following micturation is called:

    a. retention.
    b. residual.
    c. suppression.
    d. dialysis.

13. The term "pH" refers to the hydrogen ion concentration of any substance. You have learned that the "normal pH" of urine is the same as:

    a. tap water.
    b. vinegar.
    c. baking soda.
    d. salt solution.

14. Normal functioning of the kidneys prevents all of the following except:

    a. edema.
    b. dehydration.
    c. regulation of temperature.
    d. water intoxication.

15. The urinary system is for the removal of waste products from the blood. Which is NOT a normal waste product?

    a. sugar
    b. urea
    c. nitrogen
    d. creatinine

16. The kidneys make urine continuously. If a person is drinking adequate amounts of fluid and has a Foley catheter, you would expect how much urine to collect in the bag in one hour?

    a. 90 cc
    b. 180 cc
    c. 360 cc
    d. 720 cc

17. If you test the urine from the Foley bag mentioned in the previous question, what would be a normal specific gravity?

    a. 1.00
    b. 1.010
    c. 10.30
    d. 1.130

POST TEST - continued

SITUATION:

Ms. Able is a 34-year-old interior decorator who had a cystocele repaired. She had a Foley catheter and a suprapubic catheter in place when she returned to your unit. The next four questions relate to the nursing care of this patient.

18. The routine procedure in your hospital is to give cath care to all patients with catheters once on each shift. A procedure to follow when you do the cath care is to:

    a. swab away from the plastic tubing.
    b. clean toward the cath bag.
    c. wipe from front to back.
    d. apply an antibiotic ointment.

19. Ms. Able's catheter is to be irrigated to maintain patency. She tells you she feels as if she has to void and you decide to irrigate it. You will:

    a. aspirate only half of the solution.
    b. use at least 100 cc of solution.
    c. wear sterile gloves.
    d. have her hold the container.

20. You removed the catheter from Ms. Able yesterday at 0600. Today she tells you she is experiencing a burning feeling when she urinates. You note she is voiding in small, frequent amounts. Which complication does she probably have?

    a. cystitis
    b. nephritis
    c. urethritis
    d. meatitis

21. You know that the condition in question 20:

    a. develops when the sterile bladder is contaminated with bacteria.
    b. is the result of contaminating the bladder with bacteria other than its own normal bacteria.
    c. is most common in uncircumcised males.
    d. is seldom recurrent.

SITUATION:

Mr. Rodriguez is a 40-year-old native Arizonan. He claims he always works outside but never drinks much water, only beer sometimes. The next six questions relate to the complications of his lifelong habit of low-fluid intake.

22. Mr. Rodriguez states that he is experiencing a dull low backache, has been voiding in large amounts and suddenly has acute pain radiating toward the bladder. You guess he has a renal stone. You know these stones are made up of:

    a. uric acid, calcium and phosphate.
    b. urine, carbonate and potassium.
    c. urea, creatinine, nitrogen.

POST TEST - continued

23. All of the symptoms Mr. R. is having indicate:

    a. urethral spasms.
    b. referred pain.
    c. renal colic.
    d. nephralgia.

24. The doctor explains that it would be better if the stone passes on its own. Which nursing action would best help this to happen?

    a. give analgesics
    b. measure output
    c. force fluids
    d. apply heat

25. The stone doesn't seem to be moving. If it remains and blocks the ureter, which condition may result?

    a. suppression
    b. micturation
    c. renal lithiasis
    d. hydronephrosis

26. You remember that a patient with a renal calculi may have a stone lodged in:

    a. the bladder.
    b. a kidney.
    c. a ureter.
    d. all of the above.

SITUATION:

Mr. Dunn is a 38-year-old lawyer who has smoked for many years. While taking his history you learn that he has been having hematuria for some time. More recently he has been having a dull low backache and a low-grade temperature. The next four questions relate to his hospitalization and nursing care.

27. Mr. Dunn's physician orders an IVP for tomorrow. He wants to know what the letters stand for. You tell him:

    a. internal pyeloscopy.
    b. intravenous pyelogram.
    c. interrupted pressure.

28. The IVP confirms that Mr. Dunn has a renal tumor and a nephrectomy is scheduled. Because of the location of the incision you will expect the patient to object to which activity the most?

    a. coughing
    b. defecating
    c. urination
    d. ambulating

POST TEST - continued

29. Which two symptoms will indicate possible shock in Mr. Dunn?

    a. bradypnea and hot breath
    b. hemorrhage and a high temp
    c. polyuria and low blood pressure
    d. tachycardia and clammy skin

30. If the patient has clamps in the incision you will:

    a. remove when ordered.
    b. position on opposite side.
    c. check clamps for tension.
    d. irrigate the clamps prn.

SITUATION:

In some cases, a renal tumor is large enough to involve the bladder. If that is the case, the bladder is removed and an ileal conduit is made. The next two questions relate to this procedure.

31. The new bladder is made of:

    a. ileum.
    b. stomach tissue.
    c. plastic.
    d. mucus membranes.

32. The most important nursing care you will perform is:

    a. observant charting.
    b. hourly emptying of the bag.
    c. daily irrigating.
    d. good skin care.

SITUATION:

Hank Perkins is a 23-year-old roofer and the father of two small children. According to his wife he has had "trouble with his kidneys" for about a year. He has been admitted for a workup to diagnose the trouble. The next four questions relate to his condition.

33. Hank Perkins' doctor suspects glomerulonephritis and orders a 24° urine. This means the urine will be tested for:

    a. blood urea nitrogen.
    b. urea clearance.
    c. creatinine clearance.
    d. serum creatinine.

POST TEST - concluded

34. Glomerulonephritis is believed to be the result of an allergic reaction to which bacteria?

    a. staphlococci
    b. streptococci
    c. pneumococci
    d. diplerococci

35. Mr. Perkins may become hypertensive. The systolic and diastolic will be:

    a. below 210/110.
    b. above 150/90.
    c. above 160/85.
    d. below 150/90.

Directions: Fluid retention is a big problem for patients with kidney disease. Match the following types and their definitions by marking the correct letter on your answer sheet.

36. pitting

37. dependent

38. pulmonary

a. fluid in the lungs
b. fluid in the pleura
c. fingers leave indentation
d. fluid in the viscera
e. fluid in the feet

SITUATION:

If Hank Perkins' kidney disease cannot be stopped, he may lose the function of his kidneys. Should that happen, he would begin hemodialysis until he can have his kidney's replaced. The next two questions relate to renal failure.

39. As renal failure progresses, a uremic frost develops. This is caused by:

    a. diaphoresis.
    b. increasing nitrogen waste.
    c. elevated temperature.
    d. inability to excrete urine.

40. Because of the white, powdery substance, you will be careful to:

    a. give a complete bath at least twice a day.
    b. wash his skin with hydrogen peroxide.
    c. bathe him prn only.
    d. bathe him at least qid.

ANSWERS TO POST TEST

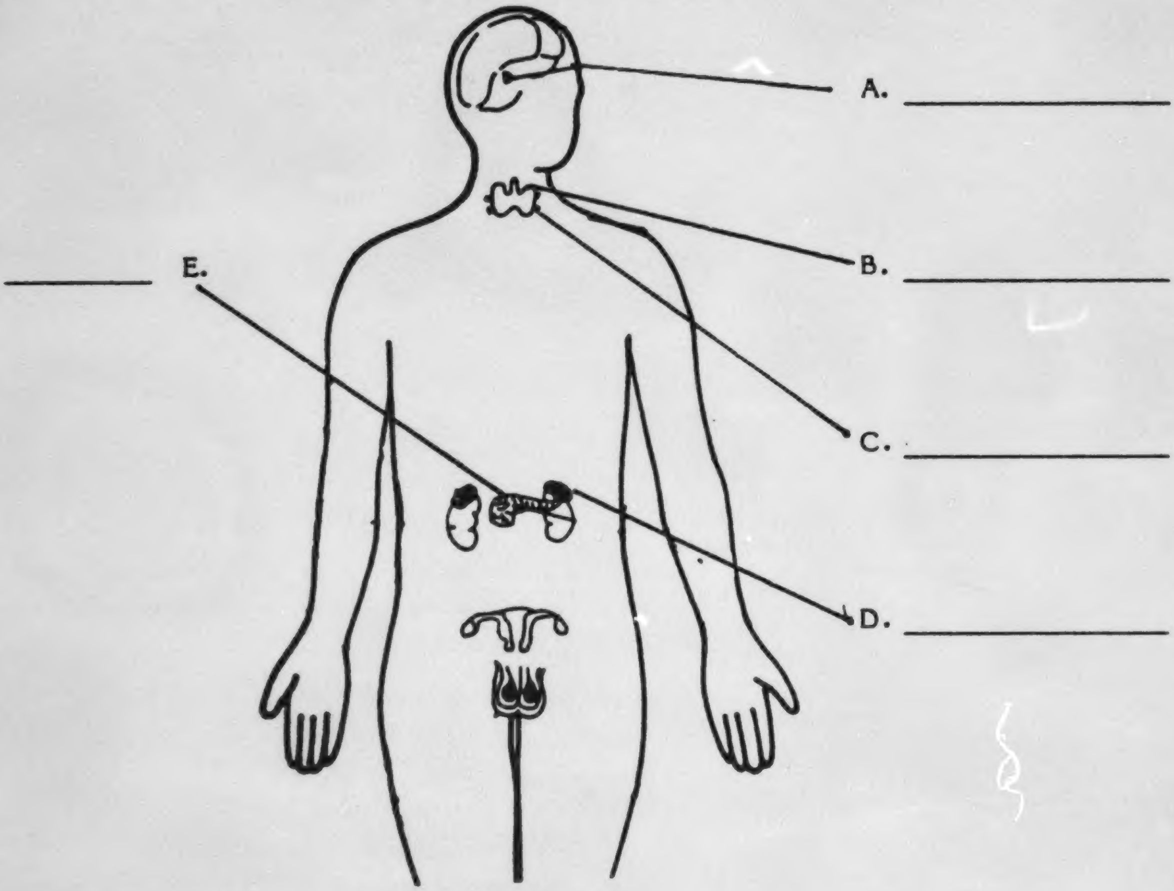
Module E

1. a
2. d
3. c
4. b
5. c
6. d
7. c
8. b
9. b
10. d
11. d
12. b
13. b
14. c
15. a
16. a
17. b
18. d
19. c
20. a
21. a
22. a
23. c
24. c
25. d
26. a
27. b
28. a
29. d
30. b
31. a
32. d
33. c
34. b
35. b
36. c
37. e
38. a
39. d
40. d

POST TEST

Module F

Directions: The following 15 questions will help you evaluate your knowledge of the endocrine glands. Using the diagram below, indicate the correct answer to the following questions by writing the appropriate letter on your answer sheet. DO NOT WRITE ON THIS EXAM.



1. Which gland produces the somotrophic or growth hormone? ______
2. Which gland controls the metabolism of calcium and might be involved in osteoporosis? ______
3. Which gland produces mineralcorticoids? ______
4. The Isles of Langerhans are located where? ______

POST TEST - continued

5. The consumption of iodized salt is necessary to the function of which gland?

    ____

6. Which gland is responsible for stimulating uterine contractions? ____________
7. Where is epinephrine produced? ____________
8. Pheochromocytoma is a tumor of which gland? ____________
9. When a patient has diabetes insipidus, which gland is malfunctioning? ____________
10. Phosphorus is an essential element in the formation of bone. Which gland controls the metabolism of this element? ____________
11. Myedema is caused by the reduced function of which gland? ____________
12. The symptoms of moonface, striae and buffalo hump result from a hyperfunctioning gland. Which one? ____________
13. Acromegaly is usually caused by the growth of a tumor on which gland? ____________
14. Tetany and involuntary jerking can result from the hypofunctioning of which gland? ____________
15. Exophthalmus can be the result of hyperactivity of which gland? ____________

__**Directions:**__ Several tests can be used to determine the functioning of the thyroid gland. From the list below, select the test that is the correct answer to the next three questions. Indicate the correct answer by writing the letter on your answer sheet.

a. RAIU
b. T_3, T_4
c. BMR
d. Thyroid scan

16. Which test measures the metabolism of body cells? ____________
17. Which test helps diagnose a malignant tumor? ____________
18. Which test reveals how much iodine has been transported from the bloodstream to the thyroid gland? ____________

POST TEST - continued

SITUATION:

During her doctor's visit, C.O. complained of being unusually tired. Her speech seemed sluggish, and she had gained 16 pounds. The doctor ordered a PBI and the results were below normal. The next two questions relate to her care.

19. You have special instructions regarding her diet. Which combinations would be best for her special dietary problems?

    a. a toasted cheese sandwich, a banana and milk
    b. a tomato stuffed with tuna salad, carrot sticks and iced tea
    c. a pear half filled with cottage cheese, buttered baked squash and eggnog
    d. half an avocado with curried shrimp, cantalope with ice cream and coffee

20. C.O. has some special environmmental control problems. You may teach her to cope with these by telling her to:

    a. use a humidifier while she sleeps.
    b. buy a nonallergenic blanket for her bed.
    c. wear warm socks to bed.
    d. keep the window open at night.

SITUATION:

L.W. is a 25-year-old woman who is planning to get married. During her premarital exam her doctor noted that she was underweight, seemed unusually nervous and had a pulse of 120 even while resting. In addition to examining her blood for VD, the doctor also ordered a T_3 and T_4. The T_3 was normal and the T_4 was elevated. The doctor feels a thyroidectomy should be performed soon. The next five questions relate to the diagnosis and surgery of this patient.

21. As you take L.W.'s admission history, she tells you that her grandmother had something wrong with her thyroid and it swelled up, but that it wasn't called hyperthyroidism. You tell her it was probably:

    a. cretinism.
    b. Addison's disease.
    c. endemic goiter.
    d. Cushing's syndrome.

22. The history form asked for the date of her last menstrual period. Because of her condition, L.W. will probably tell you her last period:

    a. flowed for two weeks.
    b. was unusually painful.
    c. was six months ago.
    d. contained many large clots.

POST TEST - continued

23. Her condition of hyperthyroidism is also called:

    a. Bright's disease.
    b. Grave's disease.
    c. lupus.
    d. exocrine goiter.

24. The postoperative period for a patient who has had a thyroidectomy is critical in special ways. Which observations would you react to immediately during the first 24 hours?

    a. drowsiness
    b. pain
    c. cyanosis
    d. red drainage

25. A life-threatening complication of surgery within the first 12 hours post-operatively is thyroid crisis. An early clue of this crisis is:

    a. marked hoarseness.
    b. sudden hypothermia.
    c. intense agitation.
    d. delirium.

26. Ms. K complains to her doctor that she has been losing weight, is always tired and has noticed a change in her skin and hair. Blood tests show that her corticoid level is very low. Which disease may she have?

    a. corticotoxicosis
    b. hypoadrenalism
    c. Cushing's syndrome
    d. Addison's disease

27. Ms. K has a bad attack of septicemia and has a severe exacerbation of the above disease. Her symptoms might be:

    a. fever and a chronic cough.
    b. restlessness and cyanosis.
    c. dyspnea and convulsions.
    d. dysuria and tachycardia.

28. An adrenalectomy is the surgical removal of the adrenal gland. Reasons for doing this procedure may include:

    a. Addison's disease.
    b. Cushing's disease.
    c. pheochromocytoma.
    d. a, c
    d. b, c

POST TEST - continued

29. Hyperparathyroidism causes an overproduction of parathormone that results in a higher concentration of calcium and phosphorus in the blood. The proper definition of this condition is:

    a. hypercalcemia and hyperphosphatemia.
    b. hyperglycemia and hypercalcemia.
    c. hyperphosphatemia and hyperkalemia.
    d. hyperglycemia and hyperkalemia.

30. Tetany is characterized by tremor and spasmodic or uncoordinated contractions occurring with or without efforts to make voluntary movements. This condition occurs in:

    a. hyperthyroidism.
    b. hypothyroidism.
    c. hyperparathyroidism.
    d. hypoparathyroidism.

Directions: Match the following by placing the correct letter from Column II that matches Column I on your answer sheet.

Column I

31. insulin shock
32. diabetic coma
33. hyperglycemia
34. hypoglycemia
35. carbohydrates

Column II

a. too much sugar in the blood
b. sugars and starches converted into glucose for energy
c. when a diabetic gets too much insulin in his/her blood and does not have enough sugar to transport into body cells
d. too little sugar in the blood
e. when a diabetic becomes hyperglycemic and does not get insulin
f. cakes, pies, candy and cokes

36. You just received a new patient on the unit and you are responsible for his care. He will have laboratory tests to check for diabetes. These tests will be:

    a. RSB, BFS, 4°PP, TGG.
    b. Diabetic Index Test, 2°PP, RBS, FBS.
    c. only an FBS and RBS to diagnose diabetes.
    d. RBS, FBS, 2°PP, GTT.

POST TEST - continued

37. The person or group who prescribes a diabetic diet is:

    a. the American Diabetic Association.
    b. the physician.
    c. the dietician.
    d. the head nurse.

38. The diabetic patient needs to:

    a. maintain a normal body weight.
    b. lose weight eventually.
    c. be on a reducing diet at all times.
    d. doesn't need to worry about weight.

39. The diabetic diet generally comes from the basic food groups. However, the diabetic diet is:

    a. low protein, low fat, low carbohydrate.
    b. high protein, low fat, low carbohydrate.
    c. high carbohydrate, low fat, low protein.
    d. low carbohydrate, high fat, high protein.

SITUATION:

S.J. is a 6-year-old who has been admitted to the pediatric unit after he was found in the school bathroom almost unconsious on the floor. His breath smelled sweet and his face was flushed. The admitting orders are: blood sugar stat IV of 1000cc normal saline, 1500 calorie ADA diet served at 0800, 1200, 1600 c̄ 2000 hs snack. BRP. Insulin 15 units Reg and 5 units NPH at 0730 q.d. 3° GTT in a.m. The following four questions relate to his diagnosis.

40. You will be helping S.J. collect the urine specimen for his GTT. One of the things you will do is:

    a. give him a glass of water each hour.
    b. label all the sterile containers.
    c. do peri-care each time he voids.
    d. test the urine for sugar and acetones.

41. When the GTT is complete, you will send how many urine specimens to the lab?

    a. 5
    b. 6
    c. 4
    d. 3

POST TEST - continued

42. On the third day of admission S.J.'s doctor orders a random blood sugar to be drawn. The lab will draw it at:

    a. 2 hr p̄ lunch.
    b. 1/2 hr ā lunch.
    c. 1/2 hr p̄ breakfast.
    d. 1/2 hr ā breakfast.
    e. any of the above.

43. The blood tests and urine tests confirm a diagnosis of diabetes mellitus. S.J.'s mother says to you, "I knew he shouldn't have played with those neighbor kids. One of them has this, you know." You tell her S.J. probably got his diabetes from:

    a. the family pet.
    b. the other child.
    c. his parents.
    d. the appendicitis he had two months ago.

SITUATION:

Mr. O is a 58-year-old Papago who came to the clinic for a checkup. Part of the routine checkup showed a urine sugar of 4+. The next seven questions relate to his diagnosis, treatment and teaching.

44. The clinic doctor has a fasting blood sugar drawn. You know that the normal value is:

    a. 60-100 mg/100 ml blood.
    b. 70-110 mg/100 ml blood.
    c. 80-120 mg/100 ml blood.
    d. 65-115 mg/100 ml blood.

45. Mr. O asks you what causes diabetes. You know there is no clear-cut cause, but there are some contributing factors such as:

    a. obese parents.
    b. large babies.
    c. persons with chronic infections.
    d. overactive alpha cells.

46. The clinic doctor orders a pill that Mr. O is to take twice a day. This drug is classified as a(n):

    a. oral insulin.
    b. glycogenic agent.
    c. oral hypoglycemic.
    d. enzyme.

POST TEST - concluded

47. Hygiene is an important part of the care for diabetics. You will teach Mr. O to:

    a. wear snug boots for support.
    b. apply a heating pad to his feet if he gets cold.
    c. wash his feet daily with soap.
    d. inspect his feet daily.

48. You will teach Mr. O about the ADA diet for diabetics. Which foods will he be able to eat the most of?

    a. peppers
    b. beans
    c. tortillas
    d. corn

49. When you notice Mr. O going into hyperglycemia, he needs something and you should do something. They are: (2 answers)

    a. he needs sugar, IV or orally.
    b. he needs insulin.
    c. notify the nurse in charge and/or physician.
    d. do a stat blood sugar.

50. When you notice Mr. O going into hypoglycemia, he needs something and you should do something. They are: (2 answers)

    a. he needs sugar, IV or orally.
    b. notify the nurse in charge and/or physician.
    c. do a urine sugar and acetone test.
    d. he needs insulin stat.

51. On the bottom of your answer sheet list six areas that are important for the education of a diabetic patient.

    a. ______________________________
    b. ______________________________
    c. ______________________________
    d. ______________________________
    e. ______________________________
    f. ______________________________

ANSWERS TO POST TEST

Module F

1. a
2. e
3. c
4. d
5. b
6. a
7. c
8. d
9. a
10. e
11. b
12. c
13. a
14. e
15. b
16. c
17. d
18. a
19. b
20. c
21. c
22. c
23. b
24. c
25. d
26. d
27. b
28. e
29. a
30. d
31. c
32. e
33. a
34. d
35. b
36. d
37. b
38. a
39. b
40. a
41. a
42. e
43. c
44. b
45. c
46. c
47. c
48. a
49. a, c
50. b, d

51.
   a. Understanding of diabetes
   b. Basic concepts of dietary management
   c. Urine testing
   d. Medication, especially administration of insulin
   e. Recall of signs and symptoms of hypoglycemia and hyperglycemia
   f. Basic principles of foot care

POST TEST

Module G

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. The male reproductive gland is the:

   a. penis.
   b. testes.
   c. prostate.
   d. scrotum.

2. The testes are located in the:

   a. abdominal cavity.
   b. inguinal canal.
   c. scrotum.
   d. retroperitoneal activity.

3. Failure of the testes to descend by puberty is a condition called:

   a. climacteric.
   b. hypogonadism.
   c. aldosterone.
   d. cryptorchidism.

SITUATION:

Mr. Paul was admitted to the hospital with epididymitis. His history showed he had been catheterized in the physician's office for a urine specimen about a week before. He also said that he had been having some trouble with strep throat for about a month. Questions four to seven relate to this situation.

4. You know that the epididymis is the:

   a. duct coiled on top of the testes.
   b. gland lying behind the bladder.
   c. tiny gland lying on both sides of the urethra.
   d. duct that penetrates the base of the prostate gland.

5. Mr. Paul may have developed epididymitis:

   a. because of prostatic hypertrophy.
   b. secondary to infection elsewhere in the body.
   c. secondary to a urinary tract infection.
   d. because of a traumatic injury to the testes.

POST TEST - continued

6. You observe that Mr. Paul's scrotum is very infected and swollen. Your nursing care may include:

    1. bedrest.
    2. ice packs to the inguinal canal.
    3. encouraging activity even though painful.
    4. elevating the scrotum.
    5. limiting fluids.

    a. 1, 2, 4, 5
    b. 1, 4
    c. 3, 4, 5
    d. 2, 4

7. To complicate his epididymitis, Mr. Paul has developed an accumulation of fluid in the sac that surrounds the testes. This is a disease known as:

    a. hydrocele.
    b. orchitis.
    c. hydrotesticulosis.
    d. testicular hypertrophy.

SITUATION:

Mr. Brown was admitted to the hospital with a diagnosis of possible BPH. Questions 8 to 11 relate to this situation.

8. You remember that the prostate gland is:

    a. posterior to the bladder.
    b. superior to the bladder.
    c. anterior to the bladder.
    d. inferior to the bladder.

9. Because of the position of the prostate, diagnosis for BPH may be confirmed by examination through:

    a. fluoroscope.
    b. x-ray.
    c. cystoscope.
    d. any of the above.

POST TEST - continued

10. Symptoms you will observe Mr. Brown for will include:

    1. urinary frequency.
    2. anuria.
    3. urinary retention.
    4. nocturia.
    5. hematuria.

    a. all of the above
    b. 1, 3, 4
    c. 1, 4, 5
    d. 2, 3, 4

11. Mr. Brown's physician is probably a:

    a. gynecologist.
    b. urologist.
    c. internist.
    d. general practitioner.

SITUATION:

Mr. Brown's diagnosis is confirmed and he is scheduled for a TURP. Questions 12 to 14 relate to this situation.

12. You know that a TURP is the:

    a. partial removal of the prostate gland through an incision in the suprapubic region.
    b. partial removal of the prostate gland while the patient is in lithotomy position.
    c. partial removal of the prostate gland requiring a small incision into the bladder.
    d. partial removal of the prostate gland through the urethra.

13. Postoperative care for Mr. Brown will include:

    a. dangling and ambulating first postop day to prevent thrombi in the legs.
    b. limiting fluids to help prevent prostatic bleeding.
    c. meatal care at least every shift.
    d. not taping the Foley catheter to the thigh to prevent tension on the pelvis.

14. If you notice some urinary leakage from around Mr. Brown's Foley catheter, you will:

    1. give meatal care.
    2. know that he may be having bladder spasms.
    3. inspect the urinary drainage for clots.
    4. check the catheter tubing.
    5. notify the nurse in charge or doctor.

    a. all of the above
    b. 2, 3, 4, 5
    c. 1, 3, 4, 5
    d. 2, 4, 5

POST TEST - continued

15. The hormone responsible for male secondary sex characteristics is:

    a. progesterone.
    b. ADH.
    c. testosterone.
    d. estrogen.

16. Sperm is produced by the ________________ gland.

    a. prostate
    b. testes
    c. seminal vesicle
    d. Cowper's

17. The one structure of the male anatomy that is used by both the urinary system and the reproductive system is the:

    a. prostate gland.
    b. seminal vesicle.
    c. ureter.
    d. urethra.

18. The female reproductive system is divided into the internal and the external organs of reproduction. The two parts are divided by the:

    a. labia.
    b. hymen.
    c. cervix.
    d. vagina.

19. The female external organs of reproduction are collectively referred to as the:

    a. labia.
    b. vagina.
    c. vulva.
    d. perineum.

SITUATION:

Mrs. Gutierrez was admitted to the hospital for surgery to repair a cystocele. She has a history of having delivered five children, including her last child, a 10-pound baby. Questions 20 to 23 relate to this situation.

20. You know that a cystocele is:

    a. the herniation of the bladder into the vagina.
    b. the downward displacement of the uterus into the bladder.
    c. a laceration from the vagina to the bladder occurring during childbirth.
    d. the prolapse of the uterus through the vagina to the outside of the body.

POST TEST - continued

21. Mrs. Gutierrez's history may have contributed to her developing a cystocele because:

    a. the uterus loses its tone and it is easily displaced after having many children, especially high-birthweight children.
    b. pelvic and perineal muscles that hold the bladder, the uterus and the rectum in place may be weakened with multiple births.
    c. delivering the 10-pound baby stretched the vagina causing a laceration.
    d. her history probably did not contribute to the development of the cystocele.

22. While you are caring for Mrs. Gutierrez, you learn that she has been experiencing which of these symptoms?

    1. constipation
    2. feeling that "something is dropping out"
    3. stress incontinence
    4. urinary retention
    5. uterus protruding through her vagina
    6. pelvic pressure

    a. 1, 3, 5
    b. 2, 3, 6
    c. 3, 4, 6
    d. 3, 5, 6

23. Stress incontinence is:

    a. a feeling of pain before the patient is incontinent.
    b. frequent incontinence and straining to void normally.
    c. incontinence when coughing, sneezing or lifting.
    d. none of the above.

SITUATION:

Mrs. Gutierrez has surgery to repair the cystocele and is returned to the floor with an IV in her hand that is to be discontinued. Questions 24 and 25 relate to this situation.

24. Surgery to repair a cystocele is known as:

    a. cystorrhaphy.
    b. posterior repair of the vaginal wall.
    c. repositioning the uterus.
    d. anterior colporrhaphy.

POST TEST - continued

25. Mrs. Gutierrez complains to you that she has not voided yet. You check her chart and find that she has not voided since surgery, which was eight hours ago. You would:

    a. notify her physician.
    b. explain to her that she will probably not need to void since she is dehydrated by the surgery.
    c. explain to her that if she relaxes and does not get upset about voiding she will probably be able to void soon.
    d. immediately catheterize her.

SITUATION:

Mrs. Roberts was admitted to the hospital with a severe vaginitis. She is a diabetic and has an ulcer on her left ankle that has been treated with antibiotics for a month. Questions 26 to 29 relate to this situation.

26. You remember that one of the most common causes of vaginitis, especially after long-term antibiotic therapy, in a fungus called:

    a. trichomonas.
    b. vaginalis.
    c. protozoan.
    d. candida.

27. Mrs. Roberts tells you that she has been having a cheesylike vaginal discharge. This discharge is known as:

    a. moniliasis.
    b. leukorrhea.
    c. pruritus.
    d. sediment.

28. In teaching Mrs. Roberts to insert a vaginal suppository, you would:

    a. tell her she may wear a peri-pad or tampon to catch excess secretions.
    b. explain that she should warm the suppository slightly.
    c. tell her that the best time to insert the suppository is early in the morning after bathing.
    d. tell her to insert the suppository while lying in bed.

29. You should also teach Mrs. Roberts that frequent douching:

    a. is a good health habit and should be done daily and prn.
    b. should be avoided as the douch tip may be irritating to vaginal tissues.
    c. should be avoided since it may remove the natural vaginal bacteria.
    d. will keep her free of unpleasant vaginal odors.

POST TEST - continued

SITUATION:

Mrs. Scott was admitted to the hospital with a diagnosis of a possible uterine tumor. She has been bleeding profusely during her menstrual periods. She is to have a D&C. Questions 30 and 31 relate to this situation.

30. Dilatation and curettage (D&C) is done to:

    a. control uterine bleeding.
    b. dilate the cervix and scrape the inside of the uterus.
    c. remove residue from an incomplete abortion.
    d. all of the above.

31. Prolonged and profuse menstrual flow during the regular period is called:

    a. menorrhagia.
    b. metrorrhagia.
    c. menorrhea.
    d. dysmenorrhea.

SITUATION:

The D&C showed that Mrs. Scott has a myoma. She is to have a total hysterectomy the next morning. Questions 32 and 33 relate to this situation.

32. A myoma is a:

    a. malignant uterine tumor.
    b. fibroid tumor.
    c. tumor that also involves the fallopian tubes and the ovaries.
    d. tumor involving only the endometrial lining of the uterus.

33. A total hysterectomy involves:

    a. removal of the body of the uterus.
    b. a removal of the uterus through an abdominal incision.
    c. removal of the entire uterus including the cervix.
    d. removal of the entire uterus, fallopian tubes and ovaries.

34. Endometriosis is:

    a. an inflammation and an infection of the endometrial tissue in the uterus.
    b. the same as PID.
    c. a condition in which pieces of endometrial tissue are found outside of the uterus.
    d. a, b

POST TEST - continued

35. The ovary is made up of many sacs called ____________________ that contain the eggs.

    a. graafian follicles
    b. corpus leuteum
    c. Bartholin sacs
    d. none of the above

36. Which female reproductive hormone is produced while the egg is maturing?

    a. LH
    b. ADH
    c. estrogen
    d. progesterone

37. Which female hormone is responsible for preparing the uterus for pregnancy and for maintaining pregnancy once the fertilized egg implants?

    a. LH
    b. ADH
    c. estrogen
    d. progesterone

Directions: Match the definitions in Column II with the correct term in Column I by placing the letter in front of the correct number on your answer sheet. DO NOT WRITE ON THIS TEST.

Column I	Column II
38. orchitis	a. accumulation of fluid in the membraneous sac that surrounds the testes and the spermatic cord
39. hydrocele	b. device fitted around the cervix
40. cystocele	c. inflammation of the testes
41. pessary	d. herniation of the bladder into the vagina
	e. congenital malformation of the male urethra

42. menorrhagia	a. vaginal bleeding between periods
43. metrorrhagia	b. painful menstruation
44. amenorrhea	c. absence of menstruation
45. dysmenorrhea	d. painful cramping between periods
	e. profuse vaginal bleeding during periods

POST TEST - concluded

Column I

46. oophorectomy
47. dermoid cyst
48. salpingitis
49. cervicitis
50. hysterectomy

Column II

a. inflammation of the fallopian tubes
b. surgical removal of the ovaries
c. inflammation of the cervix
d. removal of the uterus
e. cyst containing bones, skin and teeth

ANSWERS TO POST TEST

Module G

1. b
2. c
3. d
4. a
5. c
6. b
7. a
8. d
9. c
10. a
11. b
12. d
13. c
14. a
15. c
16. b
17. d
18. b
19. c
20. a
21. b
22. b
23. c
24. d
25. a
26. d
27. a
28. d
29. c
30. d
31. a
32. b
33. c
34. c
35. a
36. c
37. d
38. c
39. a
40. d
41. b
42. e
43. a
44. c
45. b
46. b
47. e
48. a
49. c
50. d

POST TEST

Module H

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. How many nerves carry messages to and from the brain?

   a. 12
   b. 32
   c. 40
   d. none of the above

2. The physician is checking the neurosystems of the patient. Which nerve is being checked when the physician uses a flashlight to check the pupils?

   a. I
   b. 11
   c. 111
   d. 1V

3. Mr. Tom should be prepared for an EEG by:

   a. being NPO for eight hours.
   b. receiving a preop medication.
   c. having his head shaven clean.
   d. having the procedure explained.

4. After an EEG, Mr. Tom may:

   a. not eat until the nausea subsides.
   b. need medication to relieve the headache.
   c. continue ADL if no sedative was given.
   d. have to remain flat for four to six hours.

5. Hemiplegia refers to paralysis of:

   a. the lower part of the body.
   b. only one side of the body.
   c. the body from the neck down.
   d. the left side of the body only.

6. Which is considered a surgical procedure?

   a. cisternal puncture
   b. cerebral angiogram
   c. Queckenstedt's test
   d. ventriculogram

POST TEST - continued

7. A CVA is caused by a:

   a. pulmonary thrombus.
   b. gastric thrombus.
   c. coronary thrombus.
   d. cerebral thrombus.

8. Patients with spinal cord injuries frequently perspire heavily. It would be a good idea:

   a. to use powder to soak up the moisture.
   b. to use just a little powder on the back.
   c. to ask the physician for an order for powder.
   d. not to use powder on the patient's back.

9. Narrowing of the opening in an artery in the brain is called:

   a. cerebral embolus.
   b. coronary arteriosclerosis.
   c. coronary hypertension.
   d. cerebral thrombus.

10. Encephalitis can be contracted by:

    a. eating contaminated food.
    b. using contaminated needles.
    c. being bitten by an infected mosquito.
    d. drinking polluted water.

11. The best means of preventing poliomyelitis is by:

    a. receiving a vaccination.
    b. not swimming in polluted ponds.
    c. not drinking river water.
    d. recognizing signs and symptoms.

12. Intractable pain can only be relieved by:

    a. psychology.
    b. surgery.
    c. orthopedics.
    d. pharmocology.

13. Hemiplegia refers to paralysis of:

    a. the lower part of the body.
    b. only one side of the body.
    c. the body from the neck down.
    d. the left side of the body only.

POST TEST - continued

14. Your patient has been told she is going to have a lumbar puncture performed the next day. She wants to know where the test is done. You tell her:

    a. at the base of her skull.
    b. between L-3 and L-4.
    c. between C-5 and C-6.
    d. at the laminar pulse site.

SITUATION:

Bob Drew is a 91-year-old man who had a CVA last month. He is a retired farmer who had satisfactory health until now. He now has total right-side paralysis and speaks in short, simple phrases. Question 15 to 17 relate to this situation.

15. Most of Mr. Drew's care is concerned with:

    a. bowel and bladder training.
    b. getting him up for meals.
    c. preventing deformities.
    d. teaching him to speak.

16. When talking to Mr. Drew, you should:

    a. speak as you normally do.
    b. talk like he talks.
    c. ask yes or no questions.
    d. avoid asking him to repeat things.

17. When you place Mr. Drew in a prone position, make sure that you place a pillow under his:

    a. scapula.
    b. upper leg.
    c. knees.
    d. ankles.

SITUATION:

Mary Jane has had epilepsy since she was three years old. She is now 15 and appears to be aware of her disease. Questions 18 to 21 relate to this situation.

18. Before Mary Jane has a seizure, she smells something burning. This is called:

    a. Queckenstedt's response.
    b. her aura.
    c. the clonic stage.
    d. delirium.

POST TEST - continued

19. You enter Mary Jane's room one morning and find her having a grand mal seizure. The first thing that you should do is:

    a. restrain her arms and legs.
    b. protect her head from injury.
    c. place a tongue blade between her teeth.
    d. loosen any tight clothing.

20. After the seizure, you would place her on her side because:

    a. she has requested that position.
    b. it will decrease nerve stimuli.
    c. there is less chance of her aspirating.
    d. she can rest more comfortably.

21. If Mary Jane had had a petit mal seizure:

    a. she would not have lost consciousness.
    b. she would have appeared asleep for five to ten minutes.
    c. you may have never known that she had one.
    d. it would have lasted only three minutes.

SITUATION:

Joe Yazzie is a 65-year-old man admitted to Room 1640 with a diagnosis of an enlarged prostate. Questions 22 to 27 relate to this situation.

22. When admitting him, you're almost sure that he has Parkinson's disease because he:

    a. bobs his head and can hardly hold his eyes open.
    b. has a masklike face and pill-rolling.
    c. has a difficult time talking due to jaw ptosis.
    d. has several facial ticks (spasms).

23. Mr. Yazzie should be accompanied when ambulating because he:

    a. unexpectedly looses strength in his legs and falls.
    b. trips easily and falls frequently.
    c. sways from side to side and loses his balance.
    d. gains speed with each step and then cannot stop.

24. He can help keep his upper trunk from bending too far forward when ambulating by:

    a. clasping his hands behind his back.
    b. wearing a back support.
    c. looking at the treetops or the ceiling.
    d. walking with a long cane.

POST TEST - continued

25. Since Joe Yazzie has a hard time eating because of hand tremors, as an LPN, you would:

    a. give the ordered muscle relaxant before meals.
    b. suggest that he eat food that he can hold.
    c. have a nurse aide feed him.
    d. draw the curtain so that he can eat in privacy.

26. You should suggest that Mr. Yazzie eat six small meals a day because it would:

    a. offer more variety.
    b. provide exercise.
    c. be less tiring for him.
    d. decrease a stomach ulcer.

27. Parkinson's disease:

    a. can be cured with P.T.
    b. can be cured with medication.
    c. has only remissions.
    d. cannot be cured.

SITUATION:

R. T. was diagnosed as having myasthenia gravis. She is 45 years old and has three children living at home. Questions 28 to 32 relate to this situation.

28. Myasthenia gravis is a disorder of the:

    a. motor cranial nerves.
    b. body of the neuron.
    c. nerve ganglion.
    d. nerve synapse.

29. R.T.'s muscles are:

    a. becoming weaker and weaker.
    b. tremoring most of the time.
    c. spastic and uncontrollable.
    d. becoming contracted.

30. As an LPN, you should administer her medication at the scheduled time or she may:

    a. experience a severe headache and backache.
    b. become too weak to swallow it.
    c. have severe muscle spasms.
    d. go into a coma.

POST TEST - continued

31. R.T. will probably have the most strength:

    a. after eating breakfast.
    b. after physical therapy.
    c. in the middle of the day.
    d. early in the morning.

32. The greatest problem with R.T.'s muscle condition is the possibility of her:

    a. aspirating or choking.
    b. convulsing violently.
    c. losing consciousness.
    d. intracranial pressure increasing.

SITUATION:

T.J. went to see the physician when he began to notice that he had difficulty speaking and chewing his food. The physician told him that he had multiple sclerosis (MS). Questions 33 and 34 relate to this situation.

33. MS affects:

    a. unmyelinated nerves.
    b. cranial nerves.
    c. myelinated nerves.
    d. spinal nerves.

34. T.J.'s nursing care is most concerned with:

    a. keeping him comfortable.
    b. helping the physician cure the MS.
    c. keeping him physically and mentally active.
    d. preventing exacerbations.

SITUATION:

Molly, a senior in high school, was in a car accident and severely bumped her head on the dashboard. She was admitted to the hospital for observations. The physician wants to know if there is an increase in intracranial pressure (ICP). She has a headache but is awake and alert at this time. Questions 35 to 37 relate to this situation.

35. A sign(s) that you would first observe for is/are:

    a. dyspepsia and increase in temperature.
    b. a change in her level of consciousness.
    c. positive Babinski and diaphasia.
    d. positive Queckenstedt's and tetany.

POST TEST - continued

36. The patient you are assigned to has developed a constant headache, widening pulse pressure and projectile vomiting without nausea. These are signs of:

    a. brain tumor.
    b. CVA.
    c. increased hemorrhage.
    d. increased intracranial pressure.

37. If she started to show signs of an increase in ICP, you would probably want her to remain:

    a. prone.
    b. in Trendelenberg.
    c. supine.
    d. semi-Fowler's.

SITUATION:

D.J. was admitted to Room 3883 with a diagnosis of meningitis. Questions 38 to 41 relate to this situation.

38. Meningitis is an infection of the spinal:

    a. column.
    b. fluid.
    c. membranes.
    d. cranium.

39. You would tell D.J. that a lumbar puncture would be performed in:

    a. her room.
    b. x-ray.
    c. special procedures.
    d. the NCP lab.

40. D.J. should be encouraged to drink fluids (postprocedure) to:

    a. replace lost blood.
    b. help absorption of the dye.
    c. prevent constipation.
    d. replace lost spinal fluid.

41. D.J.'s bodily secretion that should be handled with isolation technique is her:

    a. feces.
    b. perspiration.
    c. sputum.
    d. urine.

POST TEST - concluded

SITUATION:

Poncho has complained and complained of a lower backache with pain radiating down his left leg. The physician admitted him last night to the orthopedic unit of St. Charles Hospital. Questions 42 to 45 relate to this situation.

42. The doctor ordered a heating pad for Poncho's lower back to:
    - a. help relax his tense back muscles.
    - b. increase circulation and decrease the edema.
    - c. help support his spine muscles.
    - d. decrease nerve stimulation.

43. The physician performed a myelogram and a diagnosis of a ruptured disc was confirmed. Another name for ruptured disc is:
    - a. herniated cartilaginous mass.
    - b. herniated nucleus pulposus.
    - c. peripheral herniation.
    - d. lumbar herniation.

44. Poncho must have the disc removed by surgery called:
    - a. spinalectomy.
    - b. laminectomy.
    - c. discectomy.
    - d. lumbarectomy.

45. All Poncho's postop nursing care is aimed at keeping him:
    - a. in good alignment.
    - b. comfortable.
    - c. free of a spinal headache.
    - d. from having neuralgia.

Directions: Match the definition in Column II with the terms in Column I by placing the correct letter next to the number on your answer sheet. DO NOT WRITE ON THIS TEST.

Column I

46. coma
47. confusion
48. delirium
49. disorientation
50. stupor

Column II

- a. "all mixed up"
- b. patient does not know time, date or location
- c. confusion plus hallucinations
- d. lethargic
- e. patient in deep sleep and cannot be aroused

ANSWERS TO POST TEST

Module H

1. d
2. b
3. d
4. c
5. b
6. d
7. d
8. d
9. d
10. c
11. a
12. b
13. b
14. b
15. c
16. a
17. d
18. b
19. b
20. c
21. c
22. b
23. d
24. a
25. b
26. c
27. d
28. c
29. b
30. b
31. d
32. a
33. c
34. c
35. b
36. d
37. d
38. c
39. a
40. d
41. c
42. a
43. b
44. b
45. a
46. e
47. a
48. c
49. b
50. d

POST TEST

Module I

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. A common treatment for a sty is:

    a. to rest your eye and wear sunglasses.
    b. warm, moist compresses.
    c. lukewarm eye irrigations.
    d. cold, moist compresses.

2. People with "pinkeye" usually have an excessive amount of tears that should be removed by:

    a. warm, moist compresses.
    b. antibiotic eye drops.
    c. rinsing with water q2h.
    d. lukewarm saline eye irrigations.

3. The best way to prevent "pinkeye" is to:

    a. use your own washcloth and towel on your face.
    b. see an optometrist q6 months.
    c. use eye drops prophylactically.
    d. have plenty of light when reading.

4. To remove an object from the eye, the physician would:

    a. gently pull the lower lid over the upper lid and let the tears wash it out.
    b. remove it with a wet cotton swab.
    c. admit the victim to the hospital.
    d. have the victim try to rub it out.

SITUATION:

Mary Scott was told that she needs cataract surgery. She is 73 years old and lives alone. Questions 5 to 7 relate to this situation.

5. Mary Scott asks you what a cataract is. You tell her that it is:

    a. a cloudy spot on the cornea that does not allow light through.
    b. a cloudy lens that does not allow clear light rays to hit the retina.
    c. a misshapen lens.
    d. a deformed cornea.

POST TEST - continued

6. Mrs. Scott's postop care is most concerned with preventing:

   a. pressure on the suture lines.
   b. increased intraocular pressure.
   c. an infection.
   d. her from straining with stools.

7. Before she receives her glasses, she will have much difficulty:

   a. with depth perception.
   b. distinguishing colors.
   c. comparing sizes.
   d. seeing in the dark.

SITUATION:

Mr. Math had a corneal transplant of the left eye. The physician instructed him on preventing an increase in intraocular pressure. Questions 8 and 9 relate to this situation.

8. The physician probably told Mr. Math to avoid all of the following EXCEPT:

   a. climbing stairs.
   b. playing tennis.
   c. blinking.
   d. running.

9. Mr. Math will wear an eyeshield on his left eye at night to:

   a. remind him that when he wakes up he must move slowly while getting out of bed.
   b. prevent him from rubbing or scratching the eye.
   c. prevent the bright morning light from harming the cornea.
   d. prevent lint from getting into the eye.

SITUATION:

J.A. was hit with a golf ball in his left eye and the eye was removed due to severe damage. Questions 10 and 11 relate to this situation.

10. The two major postop complications are:

    a. hemorrhage and pain.
    b. hemorrhage and dislocation.
    c. hemorrhage and decreased blood pressure and pulse.
    d. hemorrhage and infection.

11. If J.A. should begin bleeding excessively, you could expect him to complain of:

    a. pain and pressure in the operative site.
    b. a wet feeling in the socket.
    c. a heavy feeling in the socket.
    d. severe itching at the incision line.

POST TEST - continued

SITUATION:

J.P. is a junior at Oak High School. His last class of the day is chemistry. He and his friend were working on a project when some acid splashed into J.P.'s left eye. Questions 12 to 15 relate to this situation.

12. His friend should immediately wash the eye out with:

    a. any alkaline solution that is handy.
    b. lukewarm water.
    c. baking soda and water.
    d. diluted salt water.

13. After he has washed out J.P.'s eye for 15 to 20 minutes, he should call an:

    a. ophthalmologist.
    b. opthalmoscopist.
    c. optimist.
    d. optometrist.

14. The physician ordered an eye ointment to be instilled into J.P.'s left eye. To instill the ointment you would ask him to lean his head:

    a. to the right side, back and look down.
    b. slightly to the right side and look up.
    c. to the left side, back and look down.
    d. slightly to his left side, back and look up.

15. You would apply the ointment:

    a. in the center of the eye in the pocket of the conjunctiva.
    b. from the inner corner of the eye by the nose and to the outer corner.
    c. from the outer corner of the eye and inward.
    d. only in the inner corner by the nose.

SITUATION:

Mrs. Petter is a 64-year-old lady who lives below me. She complained early this morning of severe pain in her right eye. The pain was so bad that she could not keep any food down. I suggested that she see an eye doctor immediately. Questions 16 to 20 relate to this situation.

16. The eye doctor told Mrs. Petter that she had glaucoma. This means that she has:

    a. an excess of aqueous fluid in the lens.
    b. too little vitreous fluid.
    c. too much aqueous fluid behind the cornea.
    d. too much vitreous humor in front of the iris.

POST TEST - continued

17. The reason for this condition is that the iris has:

    a. constricted the pupil and thus the fluid cannot drain out of the anterior chamber.
    b. covered the opening that drains the fluid out of the posterior chamber.
    c. been displaced due to eyestrain.
    d. covered the opening that drains the fluid out of the anterior chamber.

18. The physician gives Mrs. Petter eye drops that:

    a. constrict the pupil.
    b. dilate the pupil.
    c. help remove the excessive secretion.
    d. work as a local anesthetic.

19. Since you have to show her how to give herself the eye drops, you must remember to tell her:

    a. not to touch the dropper to her eyelid.
    b. to drop the eye drops in the corner of the eye.
    c. to drop the eye drops as close to the center of her pupil as possible.
    d. to always drop at least three eye drops into the conjunctival sac.

20. Mrs. Petter knows that glaucoma can never be cured but that it can be controlled with:

    a. mydriatic eye drops and a corneal transplant.
    b. miotic eye drops and an iridectomy.
    c. mydriatic eye drops and an iridectomy.
    d. miotic eye drops and a corneal transplant.

SITUATION:

Mr. Jannon is admitted to One East with a diagnosis of retinal detachment of the right eye. He is scheduled for surgery in two days to replace the retina. Questions 21 to 23 relate to this situation.

21. Upon his admission to the unit, you can expect:

    a. his right eye to be patched.
    b. to instill gtts to his right eye q2h around the clock.
    c. him to be in severe pain.
    d. both his eyes to be patched.

22. The physician's postop orders include complete bedrest and no elevation of the head or feet. This was ordered because:

    a. the physician does not want the patient to have orthostatic hypotension.
    b. the physician does not want excessive movement of the patient's head.
    c. both the patient's eyes are patched.
    d. the patient may be dizzy after the surgery.

POST TEST - continued

23. Both Mr. Jannon's eyes are patched to:

    a. help keep him calm and quiet.
    b. prevent him from scratching or rubbing his eyes.
    c. reduce eye movement.
    d. protect his eyes from light.

SITUATION:

Sally went swimming in the pond on Mr. Winter's farm and got dirty, muddy water into her ear. Questions 24 to 27 relate to this situation.

24. She developed a left middle-ear infection that is called:

    a. labyrinthitis.
    b. otitis media.
    c. sinusitis.
    d. tympanitis.

25. The physician ordered ear drops qid. You know that the ear drops should always be at room temperature when instilled in the ear to prevent:

    a. damage to the ossicles.
    b. spasms of the tympanic membranes.
    c. excessive cerumen production.
    d. vertigo.

26. To straighten Sally's ear canal, gently pull her left auricle:

    a. upward and backward.
    b. downward and backward.
    c. upward and forward.
    d. downward and forward.

27. After instilling the ear drops, have Sally lie on her:

    a. right side for three minutes.
    b. back for a few minutes.
    c. right side for five minutes.
    d. left side for three minutes.

POST TEST - continued

SITUATION:

Sally's symptoms persisted and her diagnosis included mastoiditis. The physician decided to perform a mastoidectomy. Questions 28 and 29 relate to this situation.

28. Upon her return from the recovery room, you notice a large amount of drainage on Sally's dressing. You should:

    a. mark the spot with a pen.
    b. elevate her head and have her lie on her right side.
    c. reinforce the dressing.
    d. change the dressing.

29. You should observe Sally for signs and symptoms that may include:

    a. rhinitis.
    b. nausea and vomiting.
    c. facial paralysis.
    d. a stiff neck.

SITUATION:

S.B. is a 52-year-old telephone operator who has labyrinthitis. His physician admitted him to the hospital. Questions 30 and 31 relate to this situation.

30. S.B.'s symptoms probably include:

    a. dizziness and nausea.
    b. purulent drainage from the ear and an elevated temperature.
    c. disturbed hearing and purulent drainage from the ear.
    d. dizziness and ringing in the ear.

31. S.B.'s treatment should include:

    a. ear irrigations and antibiotics.
    b. bedrest and ear irrigations.
    c. bedrest and restricted fluids.
    d. antibiotics and an increased protein diet.

SITUATION:

According to her physician, Ms. Irwin has Meniere's syndrome. Questions 32 to 35 relate to this situation.

32. She probably went to see a physician because she:

    a. became deaf in her ear.
    b. had attacks of vertigo.
    c. had severe pain in her ear.
    d. had purulent drainage in her ear.

POST TEST - continued

33. The physician told her that Meniere's syndrome is caused by:

    a. degeneration of the cochlea.
    b. nerve damage.
    c. an increase in fluid in the inner ear.
    d. a decrease in fluid in the inner ear.

34. Ms. Irwin's medical treatment includes:

    a. restriction of fluids and sodium.
    b. antibiotics and force fluids.
    c. vasoconstrictors and decrease fluids.
    d. diuretics and antibiotics.

35. Her nursing care includes:

    a. offering her pain medication frequently.
    b. accompanying her when she ambulates.
    c. restricting her visitors.
    d. giving her warm rather than cold water to drink.

36. After a stapedectomy, Mr. X:

    a. can hear better immediately.
    b. must wear a hearing aid.
    c. can usually hear better in time.
    d. is permanently deaf.

37. After the stapedectomy, Mr. X must be warned not to:

    a. blow his nose for six weeks.
    b. climb stairs.
    c. drink too many fluids or eat foods high in sodium.
    d. get water in his ear for six weeks.

38. When giving a patient an ear irrigation, gently pull the auricle:

    a. upward and backward.
    b. upward and forward.
    c. downward and backward.
    d. downward and forward.

39. After an ear irrigation, Mr. Smith should lie on his:

    a. back for a few minutes.
    b. unaffected side for thirty minutes.
    c. affected side for five to ten minutes.
    d. unaffected side for five minutes.

POST TEST - concluded

40. A hearing aid:

    a. adjusts frequency and amplifies.
    b. amplifies sound only.
    c. eliminates high-pitched sounds and amplifies sound.
    d. helps eliminate background sounds and amplifies low pitches.

Directions: Match the definition in Column II with the terms in Column I by placing the correct letter in the space provided at the bottom of your answer sheet. DO NOT WRITE ON THIS TEST.

Column I

41. blepharitis
42. mydriatic
43. conjunctivitis
44. hyperopia
45. keratitis
46. miotic
47. myopia
48. sty
49. uveitis
50. ptosis

Column II

a. inflammation of the iris, ciliary body and choroid
b. inflammation of the cornea
c. nearsightedness
d. drooping eyelid
e. inflammation of the eyelid
f. infection of a sebaceous gland on the eyelid
g. drug that constricts the pupil
h. drug that dilates the pupil
i. farsightedness
j. inflammation of the lining of the eyelid

ANSWERS TO POST TEST

Module I

1. b
2. a
3. a
4. b
5. b
6. a
7. a
8. c
9. b
10. d
11. a
12. b
13. a
14. d
15. b
16. c
17. d
18. a
19. a
20. b
21. a
22. b
23. c
24. b
25. d
26. a
27. c
28. c
29. c
30. a
31. c
32. b
33. c
34. a
35. b
36. c
37. d
38. a
39. c
40. b
41. e
42. h
43. j
44. i
45. b
46. g
47. c
48. f
49. a
50. d

POST TEST

Module J

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. A sarcoma is a type of cancer that originates in ____________________ tissue.

   a. epithelial
   b. connective
   c. organic
   d. glandular

2. Epithelial tissue is tissue that:

   a. forms the outer skin surface.
   b. lines the stomach.
   c. lines the bladder.
   d. all of the above.

3. A comparison of a malignant tumor to a benign tumor shows that a malignant tumor:

   a. usually grows more rapidly than a benign tumor but is also composed of mature cells.
   b. is usually encapsulated and a benign tumor is not.
   c. is less like the parent tissue than a benign tumor.
   d. arises from cells with no function that are completely foreign to the body and a benign tumor usually originates from normal tissue cells.

4. A neoplasm is the same as a:

   a. malignant tumor.
   b. benign tumor.
   c. new growth of tissue with no physiological function.
   d. all of the above.

5. Cancer may spread by:

   a. metastasis, invasion, diffusion or infection.
   b. metastasis, evasion or heredity.
   c. droplet contamination, evasion or implantation.
   d. metastasis, invasion, implantation or diffusion.

POST TEST - continued

6. All are warning signs of cancer EXCEPT:

   a. indigestion.
   b. pain.
   c. hoarseness.
   d. unusual bleeding.

7. The seven warning signals of cancer should be learned because the presence of any one of them is an indication:

   a. that cancer treatment is needed.
   b. that moderation in the activities of daily living must be planned.
   c. of some trouble that should receive medical attention.
   d. of precancerous lesions.

SITUATION:

Mr. Jones was admitted to the hospital with a diagnosis of possible cancer of the colon. Questions 8 to 11 relate to this situation.

8. What diagnostic procedure would you expect Mr. Jones' physician to order?

   a. blood for acid phosphatase
   b. barium enema
   c. IVP
   d. stool for C&S

9. You read Mr. Jones' chart and find that he has been complaining of these symptoms:

   1. constipation
   2. diarrhea
   3. abdominal petechiae
   4. pencil-shaped stool
   5. flatus
   6. severe pain radiating to the back
   7. tarry stools

   a. 1, 2, 4, 5, 7
   b. 2, 4, 5, 6
   c. 1, 3, 4, 5, 7
   d. 1, 2, 4, 5, 6, 7

10. Mr. Jones' tests reveal that he has cancer and he is scheduled to have surgery for an abdominoperineal resection. You know that this means the tumor is probably located in what part of the intestine?

   a. cecum
   b. transverse
   c. descending
   d. rectum

POST TEST - continued

11. If the purpose of Mr. Jones' surgery was to relieve the obstruction by the tumor in the colon and not to produce a cure, his surgery would be known as _____________________ surgery.

    a. palliative
    b. prophylactic
    c. radical
    d. preventive

12. If two sections of the colon are reconnected during surgery after the tumor has been removed, they are:

    a. resected.
    b. repositioned.
    c. anastomosed.
    d. bypassed.

13. Cancer of the colon is which type of cancer?

    a. sarcoma
    b. carcinoma
    c. astrocytoma
    d. neoplastic

14. The Papanicolaou smear test is valuable in diagnosing:

    a. breast cancer.
    b. cancer of the uterus.
    c. cancer of the cervix.
    d. cancer of the colon.

SITUATION:

Mr. White was admitted to the hospital with possible cancer of the lung. He has a history of chronic bronchitis and is a chain smoker. Questions 15 to 17 relate to this situation.

15. You remember studies by the American Cancer Society showing that:

    a. the rate of lung cancer has been slowly increasing and is more common in women.
    b. lung cancer may be caused by smoking only if the person has weak lungs and is a chain smoker.
    c. if a smoker stops smoking after he develops lung cancer, the growth of the cancer will slow down.
    d. cigarette smoking is closely linked with the development of lung cancer.

POST TEST - continued

16. You can expect that Mr. White will be scheduled for which diagnostic procedures?

    1. chest x-ray
    2. sputum for C&S
    3. bronchoscopy
    4. sputum of occult blood
    5. esophogascopy if the patient is also hoarse
    6. biopsy

    a. 1, 2, 3, 4
    b. 1, 3, 4, 5, 6
    c. 1, 3, 4, 6
    d. 1, 2, 3, 4, 6

17. Mr. White's tumor is found to be cancerous and involving portions of two lobes of his lung on the left side. What type of surgery would you expect Mr. White to have?

    a. lobectomy
    b. pneumonectomy
    c. radical pneumothorax
    d. pleurectomy

SITUATION:

Mr. Smith was admitted to the hospital with possible prostatic cancer. Questions 18 and 19 relate to this situation.

18. The diagnostic procedure that will confirm a diagnosis of early prostatic cancer is:

    a. a rectal examination.
    b. blood for acid phospatase.
    c. a biopsy.
    d. a proctoscopy.

19. Why is a bilateral orchiectomy sometimes performed with a prostatectomy when the prostate is cancerous?

    a. because androgen will then be produced to inhibit the growth of the cancer
    b. because the cancer has often metastasized to the bulbourethral glands and the seminal vesicles
    c. as a preventive surgery since the cancer may have metastasized to the testes
    d. because androgen produced by the testes will promote the growth of cancer cells

20. The most common site of terminal cancer is the:

    a. rectum and large intestine.
    b. breast.
    c. prostate and lungs.
    d. stomach and lungs.

POST TEST - continued

SITUATION:

Mrs. Clark was admitted to the hospital with a breast tumor. Questions 21 to 28 relate to this situation.

21. A positive diagnosis of cancer of the breast requires a(n):

    a. mammography.
    b. thermography.
    c. examination of the chest wall by deep x-ray.
    d. biopsy.

22. An x-ray of the breast used to detect a breast mass is called a:

    a. mammography.
    b. thermography.
    c. fluorometric test.
    d. none of the above.

23. Mrs. Clark told you that she discovered the lump in her breast when she was taking a shower. You know that the most frequent location for breast cancer is in the:

    a. inner, lower quadrant.
    b. upper, inner quadrant.
    c. upper, outer quadrant.
    d. apex.

24. Breast self-examination should be done regularly every:

    a. week.
    b. month.
    c. six months.
    d. year.

25. The prompt removal of all tumors of the breast is recommended:

    a. to relieve the patient's fear.
    b. as a palliative measure.
    c. to make the patient cancer-conscious.
    d. as a prophylactic measure.

26. The incidence of breast cancer is higher in women during the:

    a. childbearing period.
    b. period immediately following lactation especially if she had trouble with breastfeeding.
    c. geriatric period.
    d. menopausal period.

POST TEST - continued

27. Mrs. Clark's tumor is cancerous and she is to have a radical mastectomy. A radical mastectomy involves removal of:

    a. axillary lymph nodes.
    b. both breasts.
    c. the deltoid muscles.
    d. a portion of the sternum on the affected side.

28. Following surgery, Mrs. Clark will experience some loss of strength in her affected arm. To help her to regain her strength and prevent contractures, you should:

    a. keep her arm on the affected side positioned on a pillow parallel with her breast.
    b. do passive range of motion only.
    c. encourage self-care activities using the hand on the affected side.
    d. encourage her to use a sling when abulating.

29. Chemotherapy is used:

    a. in the treatment of cancer in children.
    b. as a palliative treatment rather than a cure for cancer.
    c. to produce regression of the tumor.
    d. all of the above.

30. Patients receiving deep x-ray therpay may experience side effects including:

    a. headache, abdominal cramping and polyuria.
    b. nausea, diarrhea and vertigo.
    c. polyphagia, diarrhea and skin breakdown.
    d. none of the above.

31. The patient receiving therapy with radium implants for cervical cancer should be instructed to:

    a. elevate the head of her bed after voiding.
    b. dangle by herself and call for help if she wishes to get up in a chair.
    c. remain in bed except for bowel movements.
    d. remain in bed and turn frequently with legs close together.

32. The gas given off by radium is known as:

    a. radiation.
    b. alpha rays.
    c. radon.
    d. seeds.

POST TEST - continued

SITUATION:

Jeannie Louise was admitted to the hospital with possible acute leukemia. Questions 33 to 35 relate to this situation.

33. You know that the incidence of acute leukemia is highest in:

    a. young people under 20 years.
    b. children under 4 years.
    c. adults over 25 years.
    d. adults over 40 years.

34. The patient with leukemia may have a low platelet count. This is a condition known as:

    a. anemia.
    b. lymphocytosis.
    c. leukocytosis.
    d. thrombocytopenia.

35. You should avoid giving I.M. injections to leukemia patients because they:

    a. are more sensitive to pain.
    b. have a lower resistance to infection.
    c. have a bleeding tendency.
    d. none of the above.

POST TEST - concluded

Directions: Match the definition in Column II with terms in Column I by placing the correct letter next to the number on the blank (bottom) part of your answer sheet. DO NOT WRITE ON THIS TEST.

Column I

36. benign
37. adenoma
38. metastasis
39. myosarcoma
40. angioma
41. nevus
42. implantation
43. papilloma
44. osteoma
45. melanoma
46. malignant
47. neoplasm
48. chondrosarcoma
49. squamous cell carcinoma
50. adenocarcinoma

Column II

a. cancer

b. cancer of cartilage tissue

c. tumor of the muscles

d. tumor of fatty tissue

e. nonmalignant

f. another word for tumor

g. mole

h. cancer of a gland

i. tumor of fibrous connective tissue

j. spreading of individual cancer cells in the bloodstream or lymphatic system

k. an embolus of cancer cells

l. sending out fingerlike projections to surrounding tissue

m. tumor of network of blood vessles

n. wart

o. nonpigmented cancerous skin tumor

p. pigmented cancerous skin tumor

q. cancerous tumor of the muscle

r. bone tumor

s. tumor of a gland

ANSWERS TO POST TEST

Module J

1. b
2. d
3. c
4. d
5. d
6. b
7. c
8. b
9. a
10. d
11. a
12. c
13. b
14. c
15. d
16. c
17. b
18. c
19. d
20. a
21. d
22. a
23. c
24. b
25. d
26. d
27. a
28. c
29. d
30. b
31. d
32. c
33. b
34. d
35. c
36. e
37. s
38. j
39. q
40. m
41. g
42. k
43. n
44. r
45. p
46. a
47. f
48. b
49. o
50. h

POST TEST

Module K

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

1. All of the following are examples of external defenses EXCEPT:
    a. lacrimal fluid.
    b. alkaline vaginal secretions.
    c. cilia in the respiratory system.
    d. unbroken skin.

2. All of the following are examples of reflex acts that help rid the body of pathogens EXCEPT:
    a. sneezes.
    b. coughs.
    c. emesis.
    d. hiccups.

3. To become infected, the host must be:
    a. susceptible to the pathogen.
    b. resistant to the pathogen.
    c. immune to the pathogen.
    d. invaded by a nonvirulent pathogen.

4. In general, active immunity means that:
    a. we have received our vaccinations and they are still active.
    b. our body produces the antibodies to fight off a pathogen.
    c. we have had the disease and are now resistant to the pathogen.
    d. we were actively inoculated with pathogens.

5. Natural passive immunity results when:
    a. we are injected with a toxin and not a pathogen.
    b. we are resistant to a disease only because we have already had the disease.
    c. we are naturally immune without having had the disease or a vaccination.
    d. antibodies pass through the placenta to the fetus.

6. Symptoms of an inflammation include:
    a. edema and cyanosis in the affected area.
    b. cyanosis and warmth in the affected area.
    c. numbness and warmth in the affected area.
    d. redness and pain in the affected area.

POST TEST - continued

7. As one of the internal defenses against infection, the lymph nodes:
   - a. cause the inflammation.
   - b. release histamine.
   - c. ingest and destroy bacteria.
   - d. provide nourishment for the pathogens.

8. The Salmonella bacteria usually causes:
   - a. bladder infections.
   - b. food poisoning.
   - c. pneumonia.
   - d. a type of meningitis.

9. If your patient has typhoid fever, you would take precautions when handling:
   - a. sputum.
   - b. sputum and urine.
   - c. stools and urine.
   - d. urine only.

10. You can best prevent typhoid fever by:
    - a. leaving wounds open to the air.
    - b. washing your hands after urinating or defecating.
    - c. instructing people to cover their mouths when sneezing.
    - d. washing out open cuts with a disinfectant.

SITUATION:

John was walking on the beach and stepped on a rusty tin can. The wound was quite deep, but it did not bleed very much. He did not get a tetanus shot and developed tetanus. Questions 11 to 13 relate to this situation.

11. The toxin of the tetanus bacteria will cause:
    - a. degeneration of the liver.
    - b. severe muscle contractions.
    - c. necrosis of tissue.
    - d. severe gastroenteritis.

12. The tetanus bacteria cannot live in an environment that is:
    - a. hypothermic.
    - b. acidotic.
    - c. oxygenated.
    - d. hyperthermic.

POST TEST - continued

13. John will probably be most comfortable:

    a. in a dark, quiet room.
    b. sitting in a wheelchair in the sun.
    c. if he is bathed q8h.
    d. after receiving ROM or physical therapy exercises.

SITUATION:

Toby was hiking in the mountains and fell off a cliff. He received a compound fracture of his left leg and developed gas gangrene. Questions 14 and 15 relate to this situation.

14. Symptoms of gas gangrene are:

    a. a brown watery drainage from the wound and an increase in pulse, temperature and respirations.
    b. decrease in blood pressure and pulse and a black to purple drainage from wound.
    c. green drainage from the wound and edema.
    d. a general "washed out" feeling and numbness.

15. The physician may order Toby's wound to be:

    a. redressed q a.m.
    b. cultured with every dressing change.
    c. cauterized q shift.
    d. left open to the air.

16. Rabies may be contracted:

    a. only by being bitten by a rabid dog.
    b. only by being bitten by a rabid animal.
    c. by being bitten by a mosquito.
    d. through an open wound.

17. Early symptoms of rabies include:

    a. profuse sweating and Cheyne-Stokes respirations.
    b. spasms of the throat and neck and headaches.
    c. projectile vomiting and tremors of the extremities.
    d. hyperextension of the back and a high temperature.

18. In Phase II of rabies, any stimuli, including trying to talk, brings about:

    a. respiratory arrest.
    b. a change in personality.
    c. convulsions.
    d. projectile vomiting.

POST TEST - continued

SITUATION:

Joan, a 17-year-old girl, came down with mononucleosis and so did her 19-year-old boyfriend. Questions 19 to 21 relate to this situation.

19. She probably went to a physician because:

    a. she had constant headaches.
    b. she could not relax or sleep at night.
    c. the lymph nodes around her neck were swollen.
    d. her face was swollen.

20. A nursing action in caring for Joan would include:

    a. requesting that a physical therapist show her how to exercise to keep her neck from becoming stiff.
    b. as little exercise as possible.
    c. periods of exercise and rest.
    d. ambulating her frequently.

21. Physician's orders for Joan would probably include:

    a. bedrest with BRP.
    b. antibiotics.
    c. regular diet.
    d. cool liquids.

SITUATION:

Matthew was suspected of having tuberculosis. His physician admitted him to the hospital because he was dehydrated, malnourished and generally rundown. Questions 22 to 27 relate to this situation.

22. To check for tuberculosis the physician would probably order all EXCEPT:

    a. bronchograms.
    b. gastric lavage.
    c. TB skin test.
    d. chest x-ray.

23. Matthew is coughing up large amounts of sputum into a kleenex and dropping them on the floor. You should:

    a. suggest that he try harder to hit the wastepaper basket.
    b. just be glad that he is using tissues.
    c. suggest that he swallow the sputum instead of spitting it up.
    d. tape a bag to the bed so that he can easily throw his tissue in it.

POST TEST - continued

24. Since Matthew is so malnourished, you might:

    a. order double helpings of the main course.
    b. suggest a diet high in fats and carbohydrates.
    c. order frequent small feedings any time of the day.
    d. insist he eat everything sent to him by the dietician.

25. Since Matthew is taking most of the anti-TB medications, you should observe him for complaints of:

    a. numbness in the hands and feet.
    b. anorexia and chest pain.
    c. vision and hearing disturbances.
    d. headaches and back pain.

26. The TB bacillus is killed by:

    a. sunshine.
    b. fresh air.
    c. ultrasonic light.
    d. ASA.

27. Since Matthew has had TB, he will:

    a. always be considered "infectious."
    b. have the bacillus in his lungs forever.
    c. be immune to the disease.
    d. be on medication the rest of his life.

28. When all layers of skin are burned, the patient has a(n):

    a. second-degree burn.
    b. third-degree burn.
    c. 18% burn.
    d. painful burn.

29. The most critical time for a severely burned patient is the first two days because of:

    a. hemorrhaging and electrolyte imbalance.
    b. liver shutdown and renal failure.
    c. the chance of excessive fluid loss and infection.
    d. respiratory complications and renal failure.

30. If the pateint survives the first two days, the most severe complication may be:

    a. contractures.
    b. kidney failure.
    c. karatosis.
    d. septicemia.

POST TEST - continued

31. To help prevent this from happening, the patient should:

    a. have ROM exercises as soon as possible.
    b. have forced fluids and IVs at 200 cc per hour.
    c. be properly aligned at all times.
    d. be placed in reverse isolation.

32. The Rule of Nines refers to the:

    a. area of skin burned.
    b. depth of the burn.
    c. location of the burn.
    d. ratio of fluid loss to fluid replacement.

33. Bed cradles are often ordered to:

    a. make observations of the wounds easier.
    b. help keep the wound covered.
    c. protect the linen from discharge.
    d. keep linen off the open wound.

34. Herpes Zoster is caused by a:

    a. fungus.
    b. cocci bacteria.
    c. virus.
    d. gram negative rod.

35. A symptom of Herpes Zoster is:

    a. pustules on the genitalia.
    b. blisters along the waistline.
    c. furuncles on the neck.
    d. "cold sores" on the lips.

36. Herpes Zoster can best be treated with:

    a. moist compresses and analgesics.
    b. drying lotions and analgesics.
    c. antibiotics and warm compresses.
    d. analgesics and antibiotics.

37. Cotton rather than rayon socks should be worn when the patient has athlete's foot because:

    a. bacteria thrive on rayon.
    b. they are cheaper.
    c. they keep the feet drier.
    d. they are nonallergic.

POST TEST - concluded

38. Athlete's foot can be prevented by:

a. wearing something on your feet when using public showers.
b. powdering your feet liberally with baby powder everyday.
c. applying lotion after a bath to keep feet soft.
d. letting your nursing shoes dry out in the sun after work.

39. Athlete's foot:

a. is caused by a virus.
b. causes pustules between the toes.
c. cannot be cured but must run its course.
d. can spread to the hands and groin.

40. Nursing care of a carbuncle includes applying:

a. warm moist compresses to the area.
b. a drying agent to the area.
c. an antihistamine lotion to the infected area.
d. an emollient to the carbuncle.

Directions: Match the definitions in Column II with the terms in Column I by placing the correct letter next to the number on the bottom or blank space of the answer sheet. DO NOT WRITE ON THIS TEST.

Column I

41. "cold sore"
42. blister
43. boil
44. small elevation filled with pus
45. ringworm
46. drainage
47. type of blood poisoning due to pus-forming organisms
48. time from being exposed to showing symptoms
49. stops growth of bacteria
50. kills bacteria

Column II

a. antiseptic
b. disinfectant
c. exudate
d. felon
e. furuncle
f. Herpes Simplex
g. Herpes Zoster
h. incubation
i. pustule
j. pyemia
k. tinea
l. vector
m. vesicle

ANSWERS TO POST TEST

Module K

1. b
2. d
3. a
4. b
5. d
6. d
7. c
8. b
9. c
10. b
11. b
12. c
13. a
14. a
15. d
16. d
17. b
18. c
19. c
20. b
21. a
22. a
23. d
24. c
25. c
26. a
27. b
28. c
29. c
30. d
31. d
32. a
33. d
34. c
35. b
36. b
37. c
38. a
39. d
40. a
41. f
42. m
43. e
44. i
45. k
46. c
47. j
48. h
49. a
50. b

POST TEST

Module L

Directions: Read each question and its lettered answers. When you have decided which answer is correct, circle that letter on your answer sheet. DO NOT WRITE ON THIS TEST.

SITUATION:

Bill Williams is a 16-year-old boy who suffers from severe hay fever. Every year from April to August he is plagued with symptoms of this disease. Questions one through five relate to this situation.

1. The symptoms Bill will experience are:

   a. watery discharge from nose and eyes.
   b. itching of the upper chest.
   c. attacks of sneezing and hiccups.
   d. swelling of the face and the lips.

2. Bill experiences these symptoms because of the:

   a. swelling and decongestion of the nasal capillaries.
   b. swelling and congestion of the nasal capillaries.
   c. irritation of the pollen on the synovial membranes.
   d. released antihistamine affecting the nervous tissue.

3. The best and most accurate means of controlling hay fever is to:

   a. take histamines.
   b. have skin tests regularly.
   c. move to Arizona.
   d. avoid the allergen.

4. Bill will probably be desensitized, which means he will:

   a. get an injection of the allergen he is allergic to on a regular schedule.
   b. take medication every 1 to 4 weeks, in decreasing dosages.
   c. receive injections of the antibody that will fight off the allergen every 1 to 4 weeks year round.
   d. receive large doses of histamines during the "pollen season."

5. If Bill does not receive treatment, the hay fever may eventually develop into:

   a. anaphylactic shock.
   b. bronchitis.
   c. bronchial asthma.
   d. asthmaticus bronchiectasis.

POST TEST - continued

SITUATION:

Ms. Smith was thrown from a horse and suffered lacerations on her arms and legs and a broken clavicle. The physician ordered a tetanus shot to be given as soon as possible. Questions six through nine relate to this situation.

6. Before giving her an injection, you should:

   a. ask if she has ever had an injection containing animal serum before.
   b. make sure the pharmacist has sent up the correct medication.
   c. read the available literature on how to administer the medication.
   d. ask her if she is allergic to antihistamines.

7. If it is possible to give Ms. Smith a test dose of medication, you would:

   a. give a diluted dose I.M. in the forearm.
   b. give a diluted dose subdermally in the forearm.
   c. expose a patch of skin on the forearm to the medication.
   d. give 1/100 of the ordered dose subcutaneously.

8. If she was allergic to the medication, you might expect the immediate symptom to be:

   a. red and itchy eyes.
   b. ringing in the ears and a dry mouth.
   c. nasal congestion and increased lacrimation.

9. If she shows no reaction in twenty minutes, you can conclude that she is:

   a. slow in manifesting sensitivities.
   b. not showing a reaction.
   c. not allergic to tetanus shots.
   d. not allergic to animal serum.

SITUATION:

Three hours after receiving the tetanus injection, Ms. Smith begins to show signs of mild serum sickness. Question 10 and 11 relate to this situation.

10. Symptoms that you could observe are:

    a. headache and swollen joints.
    b. purpura and lesions in visceral organs.
    c. enlargement of the spleen and the lymph nodes.
    d. generalized rash and fever.

POST TEST - continued

11. Her physician will probably order an:

    a. antiemetic
    b. antihistamine
    c. antitoxoid
    d. analgesic

SITUATION:

Mary Long is an RN working in the O.B. unit. She is allergic to walnuts. She ate a piece of her co-worker's cake without realizing that it contained walnuts. She immediately went into anaphylactic shock. Questions 12 through 15 relate to this situation.

12. An observation you could make after taking vital signs is:

    a. a slow pulse.
    b. a high blood pressure.
    c. dilated pupils.
    d. weak respirations.

13. Another way of describing anaphylactic shock is to say that Ms. Long is in a state of:

    a. cerebral arrest.
    b. severe serum sickness.
    c. circulatory collapse.
    d. peripheral contraction.

14. The cause of the anaphylactic shock is an allergic reaction to:

    a. the blood that goes to the visceral organs.
    b. the release of the histamine.
    c. the slowing of the heart and thus the circulating blood.
    d. the peripheral vessels constricting.

15. Which of the following would probably be ordered by the physician for Ms. Long?

    a. anticoagulants
    b. antiemetics
    c. antihistamines
    d. antitussives

POST TEST - continued

SITUATION:

Charlie Log is 56 years old and has been in the hospital for one week with a diagnosis of asthma. He has had asthma for years and knows exactly how to cope with it. You walk into his room and find him choking. Questions 16 through 20 relate to this situation.

16. Your first response should be to:

    a. place him on his side so that he will not aspirate.
    b. sit him in a semi-Fowler's position.
    c. help him into a position that he can best breathe in.
    d. turn on the O_2 and place the mask over his mouth and his nose.

17. Your next step would be to:

    a. offer him water to help liquify the secretions.
    b. go to the "med room" for the ordered medication.
    c. call to someone passing by to help you.
    d. remain calm and stay with him until the attack is over.

18. Mr. Log's asthma can be caused by all EXCEPT:

    a. respiratory infections.
    b. a deep depression.
    c. status asthmaticus.
    d. severe sensitivity to pollen.

19. He has difficulty inhaling and exhaling because:

    a. of narrowing of the bronchioles.
    b. he is having bronchospasms.
    c. his diaphragm is in spasms.
    d. the alveoli are collapsed.

20. When he is not having an asthma attack, you should force fluids to:

    a. liquify bronchial secretions.
    b. keep him from becoming dehydrated.
    c. keep the mucous membranes moist and better able to fight off infections.
    d. replace lost fluid when he perspires during an attack.

POST TEST - continued

Directions: Answer the following questions that do not relate to a specific situation.

21. On an elimination diet, the patient:

    a. eats only one food for three days and if symptoms are experienced, the patient switchs to another food for three days until the causative agent is found.
    b. eliminates a different food group (e.g. grains, pork, beef) every three to five weeks until the symptoms subside.
    c. eliminates food every three to four days until the patient is no longer experiencing allergic symptoms.
    d. starts out by eliminating for two weeks all foods from the diet that commonly cause allergies.

22. Which is not a skin test.

    a. scratch test
    b. friction test
    c. intradermal test
    d. patch test

23. Histamine stimulates smooth muscles resulting in:

    a. flushing of the skin.
    b. headaches.
    c. tetany of striated muscles.
    d. intestinal contractions.

24. An allergy is:

    a. a condition caused by our body's inability to produce histamines.
    b. a body's response to something in the environment.
    c. an illness caused by the release of the antihistamines in the body.
    d. an allergic substance introduced into the body of a sensitive person.

25. Antibodies:

    a. cause the symptoms of an allergic reaction.
    b. are produced by RBC's that engulf bacteria.
    c. react with RBC's to destroy foreign substances.
    d. are produced by our spleen to help us to fight off infections.

26. Histamine stimulates the exocrine glands thus increasing the:

    a. tone of the arterioles.
    b. production of gastric juices.
    c. production of the pituitary hormones.
    d. release of ACTH from the spleen.

POST TEST - continued

27. Joint pains are a symptom of the release of histamine because of:

    a. increased permeability of the capillaries.
    b. increased nervous irritation.
    c. the cell destruction in this area.
    d. the stimulation of the tendons and the ligaments.

28. A patient with urticaria will probably be more comfortable in a room that is:

    a. slightly warm.
    b. warm and sunny.
    c. slightly cool.
    d. dry.

29. Emollient baths may be helpful to a patient whose skin itches because it:

    a. causes the fluid to be drawn from the wheals.
    b. contains a local anesthetic.
    c. helps to moisturize dry scaly skin.
    d. emolsifies the causative agent.

30. The reason we do not want the patient to scratch until the skin breaks is because:

    a. this just causes a never-ending circle of more itching.
    b. the patient could get an infection.
    c. the wound will weep excessively and cause more pruritis.
    d. wheals appear in greater number in wounds.

31. Common symptoms of urticaria are:

    a. itching, pallor and pustules.
    b. warmth, redness and weeping.
    c. swelling, redness and pruritis.
    d. warmth, weeping and wheals.

32. Hives are most common on the:

    a. eyelids, lips and hands.
    b. ears, chest and thighs.
    c. eyes, ears and abdomen.
    d. abdomen, back and palms.

33. The substance that causes an allergic reaction is called an:

    a. allergenist.
    b. allergen.
    c. antibody.
    d. antihistamine.

POST TEST - continued

34. The term used when the human body reacts to its own tissues is:

    a. passive immunity.
    b. autoimmunity.
    c. active immunity.
    d. hyperimmunity.

35. The substance that is released from the damaged cell resulting in symptoms of allergy is:

    a. histamine.
    b. allergen.
    c. antibody.
    d. antihistamine.

36. Your patient is developing hives. You will record this in your charting by including which term?

    a. pruritis
    b. urticaria
    c. purpura
    d. rhinitis

37. The allergy due to foreign protein in horse serum is:

    a. bronchial asthma.
    b. anaphylactic shock.
    c. serum sickness.
    d. rose-colored rash.

38. What are the four categories of allergens?

    a. inhaled, ingested, induced, contacted
    b. ingested, contacted, inhaled, induced
    c. injected, inhaled, contacted, ingested
    d. contacted, induced, inhaled, eaten

39. An example of an inhalant is:

    a. detergent.
    b. pollen.
    c. strawberries.
    d. hives.

40. An intradermal test is administered with a:

    a. TB syringe.
    b. scalpel blade.
    c. IV needle.
    d. 1 cc syringe.

POST TEST - continued

41. During an asthmatic attack, the patient may have all EXCEPT:

    a. dyspnea.
    b. diaphoresis.
    c. copious sputum.
    d. pruritis.

42. Urticaria may be caused by:

    a. insect bites.
    b. food or drugs.
    c. serum reaction.
    d. all of the above.

43. A serious complication of untreated hay fever is:

    a. pneumonia.
    b. sinusitis.
    c. otitis media.
    d. bronchial asthma.
    e. status asthmaticus.

44. The asthmatic wheeze occurs when the individual:

    a. inhales.
    b. exerts.
    c. exhales.
    d. coughs.

45. A bee sting is caused when a person is:

    a. bitten by a snake.
    b. chewed by a flea.
    c. stung by flies or mosquitos.
    d. stung by a bee.

POST TEST - concluded

Directions: Match the definitions in Column II with the terms in Column I by placing the correct letter next to the number on your answer sheet. DO NOT WRITE ON THIS TEST.

Column I	Column II
46. urticaria	a. itching
47. epinephrine	b. sensitive
48. pruritus	c. tearing
49. lacrimation	d. adrenalin
50. reaction	e. hives

ANSWERS TO POST TEST

Module L

1. a
2. b
3. d
4. a
5. c
6. a
7. b
8. a
9. b
10. d
11. a
12. c
13. c
14. b
15. c
16. c
17. d
18. c
19. a
20. a
21. d
22. d
23. d
24. b
25. d
26. b
27. a
28. c
29. c
30. b
31. c
32. a
33. b
34. b
35. a
36. b
37. c
38. c
39. b
40. a
41. d
42. d
43. d
44. c
45. d
46. e
47. d
48. a
49. c
50. b